Appendix B1
Air Emissions

Contents

China Shipping Air Emissions Calculations
List of Tables and Figures

Methodology For Operational Emissions Calculations

Cargo Handling Equipment (CHE)

Ocean Going Vessels

Rail Locomotives and Switchers

Drayage Trucks

Worker Vehicles/Passenger Cars

Harbor Craft (Tugs)

2008 EIR/EIS Mitigated Emissions Inventory (FEIR Mitigated Scenario)

Emissions Summaries with Proposed Mitigations (Revised Project)

1.0 Emissions Methodology – Models and Tools

This Recirculated Draft SEIR (RSEIR) represents an analysis of the emissions from continued operation of the CS Terminal at Berths 97-109 using the latest tools and models available. The 2008 EIS/EIR emissions analysis utilized tools and models, activity data and forecasts of throughput and activity, that are now considered out of date and cannot be replicated, as described further below. In addition, the baseline for this RSEIR for air quality cannot use the direct quantitative results of the 2008 EIS/EIR as these can no longer be replicated.

The AQ/HRA analysis relies on three primary steps: (1) the development of emissions from all source categories; (2) the use of those emissions as inputs to dispersion modeling to predict pollutant concentrations; and (3) the use of the predicted pollutant concentrations to estimate health risk impacts. Since the analysis conducted as part of the 2008 EIR/EIS, substantial revisions have been made to all of the tools used in the three steps described above for AQ analysis. These revisions are substantial enough that it is not possible to recreate the results of the 2008 EIR/EIS analysis.

1) Emissions analysis relies on a variety of models that are used to estimate emissions from specific source categories. For all on-road vehicles (diesel and gasoline), the current CARB release of the EMFAC model is EMFAC2017 (CARB, 2018). This EPA-approved model replaces EMFAC2014, and the previous EMFAC2007 which was used in the 2008 EIR/EIS. As the latest version of the model, EMFAC2017 represents CARB's current understanding of motor vehicle travel activities and their associated emission levels. As part of CARB's Technical Documentation for the EMFAC2017 model, CARB has identified the following overview of major changes to the EMFAC model with release of EMFAC2017 (CARB, 2018a):

    - Additional capability to come up with emission estimates for all three GHG pollutants CO2, CH4, and N2O. A GHG module consistent with CARB's official methodology is developed and included in the EMFAC2017. In addition to update to criteria pollutants, EMFAC2017 model also incorporates updated CO2 emission rates for light duty vehicles using national fuel efficiency data from www.fueleconomy.gov, the official U.S. government source for fuel efficiency information.
    - A new module to improve the characterization of activity and emissions from transit buses. Transit buses, namely, the "urban buses" category in EMFAC
    - Updates to both running and start exhaust emission rates using new Federal Test Procedure (FTP) data from the US EPA's In-Use Vehicle Program (IUVP) and emission test data from the CARB's Vehicle Surveillance Program (VSP). These updates have resulted in higher start emissions and lower running exhaust emissions for most of the light duty vehicles in today's fleet. Due to lack of data on evaporative emissions, EMFAC2014 evaporative emissions are used for EMFAC2017.

- Compared to EMFAC2014, NOx and PM emission factors for heavy duty diesel trucks and buses are higher in EMFAC2017. Adjustments were made to the frequency of all NOx and PM related TM&M categories for 2010+ MY engines. There is an update to the emission rate increase associated with PM related TM&M.
- EMFAC2017 implemented major updates on activity profile for both LDVs and HDs using the latest vehicle data collected since its previous release.
- Policy effects update: The final version of the Phase 2 rule was published in October 25, 2016. The Phase 2 standards are the second phase of federal heavy– duty GHG standards and build upon the Phase 1 standards. The regulation imposes new requirements for newly manufactured compression and spark ignited engines in Class 2b through Class 8 vehicles (CARB, 2018a).

In addition to the EMFAC2017 model, CARB has released specific inventory tools for several source categories that were not available at the time of the 2008 EIR/EIS. These include the 2011 Cargo-Handling Equipment Inventory Model (CARB, 2017b), and the VISION model for locomotive emissions scenarios (CARB, 2017c). The 2011 CHE Inventory model replaced the use of CARB's OFFROAD2007 to estimate emissions from CHE (CARB, 2017a). Major updates included in the 2011 CHE Inventory Model include:

- Updated population and activity data – based on Port of Los Angeles and Long Beach inventories, major rail yard inventories, other port inventories and regulatory reporting data;
- Impact of the 2008-2009 recession on growth rates of equipment populations;
- Engine load factors;

The VISION model version 2.1 module for locomotives was released in June 2016 (CARB, 2017c). VISION v2.1 was designed to support CARB's 2016 Mobile Source Strategy and incorporates the latest planning inventory and assessments. Prior to the VISION v2.1 release, no specific guidance was available from CARB or other agencies on forecasting locomotive emissions to future years of analysis in CEQA documents. VISION v2.1 includes the following updates for locomotive emissions:

- Updated Tier 4+ emission factors for PM and NOx;
- Updated Tier distribution for all Tiers to match the proposed measures in the Mobile Source Strategy;

Collectively these updates to the emissions models represent a substantial change in the quantitative prediction and forecasting of emissions from a project-level analysis.

2) Dispersion modeling analysis primarily uses the EPA's AERMOD modeling system (EPA, 2017). The AERMOD modeling system was used in the dispersion modeling conducted for the 2008 EIR/EIS, however the model has undergone many changes since then. The EPA has released a total of 12 Model

Change Bulletins since 2006, indicating major and minor changes to the model code. A partial list of the changes included in the Model Change Bulletins is provided below:

- Bug fixes for a wide variety of bugs reported in previous model versions (throughout all Model Change Bulletins);
- New options to vary emissions by month, hour-of-day and day-of-week;
- New urban options to allow multiple urban areas to be defined in a single run;
- New option to specify initial in-stack NO2 ratio for PVMR and OLM options;
- New option to allow for both flat and elevated terrain treatments within the same model run;
- Incorporation of user-specified dry deposition velocities for gaseous emissions;
- Incorporation of new algorithms to support estimation of concentrations in the form of the 1-hour NO2 and SO2 NAAQS and the 24-hour PM2.5 standard (based on a ranked percentile value averaged over the number of years processed);
- New option to add user-specified background concentrations to modeled concentrations to determine cumulative impacts;
- Incorporated the equilibrium NO2/NOx ratio component of the PVMRM option into the OLM option for estimating conversion from NOx emissions to ambient NO2 concentrations;
- Modification to the urban option has been implemented to address issues with the transition from the night-time urban boundary layer to the daytime convective boundary layer;
- New option to allow the user to specify the number of years of meteorological data that are being processed for a particular run;
- Introduction of two new options to address concerns regarding model performance under low wind speed conditions;
- Introduction of a line-source type;
- New option to model NO2 using the Ambient Ratio Method (ARM);
- New option to vary background ozone and background modeled pollutant concentrations by wind sector;

This list represents just a partial sample of the enhancements, bug fixes and other miscellaneous changes that EPA has made to the AERMOD model since 2008. It would not be expected that results from running the 2006 or 2007 version of the model could be duplicated running the 2016 (latest) version of the model given the number and extent of changes that have been made.

3) In response to concerns regarding children's health and to address the specific mandates of SB-25, OEHHA worked in conjunction with the Air Resource Board (ARB) to revise the previous set of Technical Support Documents (TSD)

(OEHHA 2008, 2009 and 2012) to incorporate scientific information and approaches developed since the previous guidelines were prepared. These TSDs delineated OEHHA's revised methodologies for deriving reference exposure levels (RELs), deriving, listing and adjusting cancer potency factors, and applying updated exposure assumptions and risk assessment methodologies including stochastic risk assessment based on current science. To date, these TSDs have undergone public and peer review, and were approved by the State's Scientific Review Panel on Toxic Air Contaminants, and adopted by OEHHA for use in the Air Toxics Hot Spots program. OEHHA released the final Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments in February 2015 (OEHHA, 2015), which combines the critical information from the three TSDs into a guidance manual for the preparation of HRAs. The Guidance Manual has been reviewed by the public and SRP. This guidance supersedes the 2003 Guidance Manual (OEHHA 2003) and is the final integrated document of the series that incorporates, clarifies, and finalizes methodologies contained in the three previously-released supporting TSDs to support the continued conduct of risk assessment under the Air Toxics Hot Spots Program (AB2588). The major changes proposed in the Guidance Manual for risk evaluation include the incorporation of age-sensitive factors (ASFs) in the cancer risk evaluation, age-specific exposure variates (e.g. breathing rates and soil ingestion rates), reduced exposure durations for individual resident and worker, incorporation of "fraction of time at home" (FAH) in residential risk evaluations, revised methodology for the dermal pathway evaluation, additional multi-pathway chemicals, mandatory requirement on population risk evaluation, multi-pathway risk evaluation and repeated 8- hour evaluation (where applicable), and recommendations on how to evaluate short-term construction projects. Analysis of the most recent OEHHA Hot Spots Guidance (2015) indicates that OEHHA's proposed risk assessment methodologies may lead to a lifetime residential risk estimate from inhalation exposure roughly 3 times higher, relative to the risk results calculated from methodologies recommended in the 2003 Hot Spots Guidance Manual. On the other hand, the risk estimate based on the 2015 OEHHA recommended risk assessment methodologies is slightly lower for the long-term worker. The impacts from construction projects which have shorter exposure duration are expected to be much higher on residents and slightly higher on workers based on the 2015 OEHHA methodologies.

2.0 Emissions Methodology – Scenarios

This Recirculated Draft SEIR employs one baseline scenario: 2008 actual activity and actual compliance with 2008 EIS/EIR mitigations (the "2008 Actual Baseline"). The 2008 Actual Baseline would be identical to a "2008 Mitigated Baseline" since the conditions during the 2008 Baseline were found to be in compliance with the 2008 EIR/EIS mitigations being evaluated in this document, and therefore, there is no difference between a 2008 Mitigated Baseline and the 2008 Actual Baseline used in this Recirculated Draft SEIR. This Recirculated Draft SEIR uses the 2008 Actual Baseline in determining the significance of incremental changes (impacts) of operational emissions and pollutant concentrations, such as AQ-4 and AQ-7, respectively.

Two future conditions (2018 to 2045) scenarios are analyzed in comparison to the 2008 Actual Baseline (the year 2018 is considered a future year because actual terminal activity data are not yet available, necessitating the use of forecasted data from 2017):

1) future conditions (2018 to 2045) assuming incremental increase in terminal throughput as shown in Table 2-3 of Section 2.0 and timely implementation of the 2008 EIS/EIR mitigation measures (referred to as the FEIR Mitigated Scenario); and

2) future conditions (2018 to 2045) assuming an incremental increase in terminal throughput as shown in Table 2-3 of Section 2.0 and implementation of the modified mitigation measures under the Revised Project (referred to as the Revised Project Scenario).

In addition, in this Recirculated Draft SEIR analysis, two past conditions ("interim years" 2012 and 2014) scenarios are analyzed in comparison to the 2008 Actual Baseline, :

1) past conditions (in "interim years" 2012 and 2014), assuming actual activity and actual compliance with 2008 EIS/EIR mitigations (referred to as the "2012 Actual and 2014 Actual" under the Revised Project Scenario) and

2) past conditions (in "interim years" 2012 and 2014) assuming actual activity but also assuming implementation of all mitigation measures required by the 2008 EIS/EIR had occurred in a timely fashion (2012 and 2014 "FEIR Mitigated" Scenarios).

Table B1-A summarizes the study years and characteristics of the two main scenarios analyzed in this Recirculated Draft SEIR, the "Revised Project" and the "FEIR Mitigated". The Revised Project may also be referred to as "Proposed Mitigated" in the Appendix B1 as it pertains to the revisions to mitigations in the Recirculated SEIR; while the FEIR Mitigated Scenario may also be referenced simply as "Mitigated".

Table B1-A: Recirculated Draft SEIR Analysis Years and Scenarios for Air Quality Analysis

<table>
<tr><th rowspan="2">Scenario Referred to as</th><th rowspan="2">Study Year</th><th colspan="2">Revised Project (or "Proposed Mitigated")</th><th colspan="2">FEIR Mitigated (or simply "Mitigated")</th></tr>
<tr><th>Activity</th><th>Mitigation</th><th>Activity</th><th>Mitigation</th></tr>
<tr><td>Actual Baseline</td><td>2008</td><td colspan="4">Actual activity, and actual compliance of 2008 EIS/EIR mitigations</td></tr>
<tr><td rowspan="2">Past Years</td><td>2012</td><td>actual</td><td rowspan="3">Actual compliance level of 2008 EIS/EIR mitigations</td><td>actual</td><td rowspan="7">Full compliance with 2008 EIS/EIR Mitigations</td></tr>
<tr><td>2014</td><td>actual</td><td>actual</td></tr>
<tr><td rowspan="5">Future Years</td><td>2018</td><td>projected</td><td>projected</td></tr>
<tr><td>2023</td><td>projected</td><td rowspan="4">Revised Project proposed mitigations (as of this Recirculated Draft SEIR)</td><td>projected</td></tr>
<tr><td>2030</td><td>projected</td><td>projected</td></tr>
<tr><td>2036</td><td>projected</td><td>projected</td></tr>
<tr><td>2045</td><td>projected</td><td>projected</td></tr>
</table>

In addition, as described in Appendix B3, a floating Future Baseline emissions inventory was developed to assess cancer risk. The floating Future baseline uses 2008 activity levels, but uses emission factors, projected over the 25-, 30-, and 70-year exposure periods, that incorporate the effects of existing air quality regulations. The floating baseline does not include effects of mitigation measures from either the Revised Project or FEIR Mitigated Scenario; rather, it includes solely the future effects of existing air quality regulations. The floating baseline is only used for cancer risk impact evaluation and not evaluated against other impacts such as ambient concentrations or emissions.

3.0 Methodology for Determining Operational Emissions

Operational emission sources are represented by five major sources: (1) container ships (referred to as Ocean Going Vessels, or OGVs); (2) tugboats (also referred to as harbor craft); (3) drayage trucks; (4) line-haul and switcher locomotives; and (5) cargo handling equipment (CHE) working or servicing the China Shipping (CS) terminal. These sources generate emissions in the form of CO, VOC, NOX, SOX, PM10, PM2.5, and diesel PM (DPM); the latter is produced by diesel-fueled sources. In addition, minor sources such as worker commute vehicles, are included. When ships are using shore power or AMP, indirect emissions would be created by regional power plants burning fossil fuels to generate the electricity consumed by the hoteling ships; electricity consumption emissions are also estimated for on-site power demand such as lighting and buildings. Terminal electricity consumption emissions are evaluated for greenhouse gases only. Finally, on-road sources like trucks and commuter vehicles contribute to estimated paved road dust emissions.

Information regarding the activity and characteristics of proposed operational emission sources was obtained primarily from POLA staff, WBCT staff, a traffic study conducted as part of this SEIR, and the annual published 2013-2018 Port of Los Angeles Emissions Inventories (LAHD 2014-2018). Activity and utilization assumptions used to estimate peak daily operational emissions for comparison to SCAQMD emission thresholds represent upper-bound estimates of activity levels at the terminal; these levels would occur infrequently, and, therefore, represent a conservative set of assumptions.

Table B1-B summarizes the regulations assumed in the future operational emissions calculations for all scenarios. Current in-place regulations are treated as default project elements rather than mitigation because they represent enforceable rules, with or without proposed project approval. Measures developed as part of the RSEIR analysis and planned for future implementation at the Project level were treated as mitigation.

Table B1-B: Regulations and Agreements Assumed as Part of the Operational Emissions

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains
MARPOL Annex VI: 0.1% sulfur limit for fuels, beginning in 2015 (200 nm of CA coast).	**EPA Engine Standards for Marine Diesel Engines:** NO_X, HC, and CO engine	**EPA Emission Standards for Non-road Diesel Engines:** Engine	**EPA Emission Standards for On-road Trucks:** Tiered standards gradually phased in over all	**EPA Emission Standards for Locomotives:** Tier 0 through Tier 4 standards gradually

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains
NO_X engine emission limits for new engines.[a] **EPA Engine Standards for Marine Diesel Engines:** NO_X, HC, and CO engine emission standards for new engines.[b] **CARB Airborne Toxic Control Measure for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Coast:** Limits sulfur content for marine gas oil or marine diesel oil to 0.1% sulfur by January 2014. **CARB Regulation to Reduce Emissions from OGV Auxiliary Engines at Berth:** Operational limits for OGV auxiliary engines while at hoteling at berth: 50% in 2014, 70% in 2017, and 80% in 2020. **CAAP Vessel Speed Reduction Program:** 95% compliance to 20 nm.	emission standards for new engines. **CARB Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft:** Requires that harbor craft engines meet EPA's most stringent emission standards per an accelerated, rule-specified compliance schedule. **California Diesel Fuel Regulation:** 15 ppm sulfur.	standards for newly built engines. **CARB Mobile CHE at Ports and Intermodal Rail Yards:** Emission performance standards on new and in-use terminal equipment**.** **California Diesel Fuel Regulation:** 15-ppm sulfur.	years due to normal truck fleet turnover. **California Diesel Fuel Regulation:** 15-ppm sulfur. **Heavy Duty Diesel Vehicle Idling Emission Reduction Regulation:** Idling limits for on-terminal trucks. **CARB On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation:** Trucks are required to replace engines with 2010+ engines by January 2023. Trucks with GVWR greater than 26,000 must also meet PM BACT. **CAAP Clean Truck Program:** In January 2012, banned all trucks that did not meet 2007+ EPA standards for heavy duty trucks.	phased in over all years due to normal locomotive fleet turnover. **CARB 1998 South Coast Locomotive Emissions Agreement:** Cleaner NO_X Class I locomotives. **CAAP PHL Rail Switch Engine Modernization:** All PHL locomotives meet Tier 3 or 4 standards. **CARB Non-road Diesel Fuel Rule:** 15-ppm sulfur starting January 1, 2012. Applies to all line-haul locomotives. **California Diesel Fuel Regulation:** 15-ppm sulfur. Applies to all switch locomotives.

Note:
This table is not a comprehensive list of all applicable regulations; rather, the table lists key regulations and agreements that substantially affect the emission calculations for the years analyzed. A description of each regulation or agreement is provided in Section 3.2.3.

[a] 100% compliance with IMO Annex VI sulfur limits in SO_X Emission Control Areas is assumed and analyzed.
[b] Compliance with EPA engine standards is assumed but not analyzed for every pollutant other than NOx. This is because emissions factors for marine vessels currently available in the literature only provide quantifiable effects of engine Tier levels for NOx emissions.

Emissions for every pollutant by source category, by analysis year, by averaging period (annual, 24hr, 1hr, 8hr) and for every scenario studied in this RSEIR are summarized in Tables B1-661 through 676 of Appendix B1.

3.1 Container Ships

Emissions of ocean going vessels were calculated for each engine type (boiler, main propulsion engine, and auxiliary engine) and by activity and location where emissions take place. Emissions were calculated during transit, hoteling at berth, and anchorage of container vessels. Activity assumptions for the 2008 baseline, 2012 and 2014 past years were based on actual vessel call records for vessels visiting China Shipping terminal in 2008, 2012 and 2014 respectively. Records provide vessel characteristics, including TEU category of vessels, main engine horsepower, engine tier levels, etc. For future years, vessel call activity was developed by the Port using the BERTHA model, which simulated the number of calls and TEU category of vessels annually calling in future years at China Shipping, as well as peak day scenarios for vessel activity. The assumptions below were applied to estimate OGV emissions.

3.1.1 Emission Factor Assumptions:

- Emission factors for propulsion engines, auxiliary engines, and auxiliary boilers were obtained from the Port Emissions Inventories (LAHD 2018). The Port Emissions Inventories provided emission factors by Tier level which were combined to reflect the age mix of vessels in each analysis years for operations. These are shown in Table B97 through 100.
- Based on the POLA inventories, it was assumed that diesel propulsion engines were low-speed and auxiliary engines were medium-speed.
- Emission factors for propulsion and auxiliary engines are dependent upon engine tier, which in turn is dependent upon engine age. For 2008, 2012 and 2014 calculations, the mix of vessels by age, i.e., vessel fleet mix, for each ship TEU category was determined from keel dates in vessel call data records for China Shipping terminal in 2008, 2012 and 2014 respectively. Emissions factors by tier were combined into fleet-wide average based on the fleet mix for each ship TEU category.
- The mix of older and newer ships calling at CS in future years (2018-2045) was predicted using POLA CEQA Terminal Level Container Ship Forecast for Tier 3 Engines (POLA 2015). A fleet mix baseline based on 2014, the last year of actual activity, was established for OGVs calling in the future:
    - Vessels of size bins calling in the future which also appeared in 2014 (e.g. 8000 TEU and 9000 TEU) were assumed to be the same vessels, thus predicting their age in future years by the POLA forecasting method.
    - Vessels size bins not originally present in 2014 but now showing in future were assumed to be the same age during 2014 as the closest-size vessel of the same capacity group from 2014
- In 2008, 2012 and 2014 calculations, emission factors were adjusted for the appropriate sulfur fuel content determined by vessel call records. In future year

calculations, 0.1% fuel sulfur content was assumed for peak day and annual ship calls per CARB's *ATCM for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels within California Waters and 24 Nautical Miles of the California Baseline* and MARPOL Annex VI (CARB 2011).

- Correction factors by percentile load of propulsion were applied to the Main Engine emission factors to account for low loads and different engine manufacturing brand, i.e., MAN B&W versus Non-MAN B&W engines. MAN B&W engines consider the effects of slide valves on emissions. These correction factors are summarized in tables B1-101 to B1-104 and were obtained from the POLA Emissions Inventories.

Table B1-C. Assumptions about Slide Valves and MAN/Non-MAN engines based on ship TEU category

TEU Category	Main Engine Type	Assumption
5,000-6,000	MAN	Cross-referenced with IHS Ship Registry and historical CS call data. 16/18 vessels have MAN engines.
7,000-8,000	Non-MAN	No historical call data for this capacity. Non-MAN is a conservative assumption.
8,000-9,000	MAN	Same as 2014
9,000-10,0000	Non-MAN	Same as 2014
12,0000-13,000	Non-MAN	Assumed that engines are non-MAN
TEU Category	Has slide valve?	Assumption
5,000-6,000	Yes	Based on keel laid year from historical call data. All newer ships have slide valves.
7,000-8,000	Yes	Assuming that newer ships have slide valves.
8,000-9,000	Yes	Same as 2014
9,000-10,0000	No	Same as 2014
12,0000-13,000	Yes	Assuming that newer ships have slide valves.

3.1.2 Engine and Boiler Load Assumptions:

- For the 2008, 2012 and 2014 calculations, auxiliary engine and boiler loads by TEU ship category were obtained from the Port Inventories (LAHD 2018). Loads for transit, hoteling, and anchorage were provided by Starcrest.

- During transit, main engine load factors were determined using the propeller law, which states that the engine load factor is proportional to the speed of the ship cubed. For the baseline and interim past years calculations, speeds by transit zone were obtained from 2008, 2012 and 2014 call records. For future years, the BERTHA model provided estimated transit speed by zone, including annual percent compliance with VSRP.
- For vessel TEU categories projected to call in future years that also called in 2014 (8k, 9k), the same loads as in 2014 were assumed for each engine type, by zone.
- For vessels sizes that did not call during 2014, but were projected to call in the future, loads were assumed as follows:
    - Main Engines: 12k TEU vessel loads were projected with the same increment between 2014 load values of the 8k TEU vessel and the 10k TEU vessels. 5k and 7k TEU vessel loads averaged between 2014 load values of 4k-6k and 6k-8k vessels, respectively.
    - Auxiliary and Boiler: 5k and 7k TEU vessels loads were based on the 2014 POLA inventory default average loads by zone (Tables 3.4 and 3.6). 12k TEU vessel loads assumed the same as 13k TEU vessel loads shown in the 2014 POLA inventory (Tables 3.4 and 3.6).

3.1.3 VSRP Assumptions:

- Vessel speed reduction program (VSRP) compliance in the baseline and interim past years were determined from actual vessel call records for the Revised Project. This is summarized in Table B1-135.
- Annual VSRP compliance between the precautionary zone and 20 nm (zone 4) and 20 nm and 40 nm (zone 5) in all future analysis years was assumed to be 95% under the Revised Project per the proposed mitigations, and 100% under the FEIR Mitigated Scenario, per 2008 EIS/EIR mitigations.
- Per Bertha model, during future year peak days, all vessels are traveling through the fairway under VSR compliant speed.

3.1.4 Hoteling Assumptions:

- During hoteling (without AMP), ships were assumed to turn off main engines but leave the auxiliary engines and boilers running.
- Hoteling times used in annual calculations during 2008, 2012 and 2014 were obtained from the POLA inventories. The average hoteling time per call for future analysis years (2018-2045) was determined by BERTHA model and was based on anticipated shipping schedules, future projected lifts per call, ship work rates, and crane productivity. The average hoteling time for baseline, interim past years and future years are summarized in Table B1-106 and Table B1 –134 for FEIR Mitigated and Revised Project respectively.
- Peak day hoteling times for past years 2008-2014 were derived from actual terminal call records. Peak day hoteling times were determined by BERTHA model for each future analysis year (2018-2045) and ship size category, and were

based on anticipated shipping schedules, future projected lifts per call, ship work rates, and crane productivity.

3.1.5 AMP Assumptions:

- With AMP, the auxiliary engines would be turned off, but boilers would continue to operate. However, it is assumed that vessels connecting to AMP would require time with auxiliary engines running to engage and disengage from AMP (CARB 2007). Connection time for AMP plug-in is based on the Port Inventories (LAHD, 2018). The connectivity time is summarized in Tables B1-106, and B1-134 for FEIR Mitigated and Revised Project scenarios, respectively.
- Annual AMP utilization is assumed to be 95% of annual calls per proposed mitigations in the Revised Project for years 2023 through 2045; and 100% of annual calls per EIR/EIS mitigations in the FEIR Mitigated Scenario for years 2012 through 2045.
- Peak day emissions represent the day of highest in-harbor emissions from OGVs depending on compliance and activity conditions for each year, and therefore, it may involve no AMP usage during hotelling when applicable, according to call data; that may be, for example, a day with high in-harbor activity and no usage of shorepower. Peak day of OGV emissions for years 2008-2018 assumes no AMP usage for all peak day berthing vessels under the Revised Project based on actual call data records. Peak day emissions under the FEIR Mitigated scenario for years 2008-2018 assume AMP usage for all berthing vessels during the peak day based on the 100% annual compliance requirement of 2008 EIR/EIS mitigation.
- Peak day of OGV emissions for years 2023-2045 assume usage of AMP for all vessels at berth during the peak day, based on mitigation requirements from both the Revised Project and FEIR Mitigated Scenario.

3.1.6 Additional Assumptions:

- Ship transit emissions were calculated from berth to the edge of the SCAB over-water boundary (roughly a 50-mile one-way trip).
- 2008, 2012 and 2014 peak day emissions are derived from analyzing emissions from days of highest 24hr consecutive activity within harbor in 2008, 2012 and 2014 vessel call records respectively, and selecting the 24hr period with highest in-harbor emissions. In-harbor activity consists of hoteling at berth, maneuvering within harbor, and anchorage.
- Once the peak day is selected the 8hr period within the peak day with the highest in-harbor NO and PM emissions is selected as the peak 8hr period. Similarly, the highest 1hr of NOx and PM emissions within harbor is selected as the 1hr peak period.
- Future year project peak day emissions profiles are from BERTHA model. Three sets of data were analyzed: one for 2018, one for 2023 and another for at capacity years - 2030, 2036 and 2045. This typically included three vessels, two at berth and one anchoring.

- Some arriving container ships are unable to proceed directly to the berth, but instead must wait at a designated anchorage point either inside or outside the breakwater until given clearance to proceed to the berth. Average anchorage frequency and duration for each container ship size were obtained from the POLA inventories, based on data for China Shipping ship visits. Similar to hoteling, the main engine is assumed to be turned off during anchorage, while the auxiliary engines and boilers are assumed to remain running.
- For future years, anchorage frequency for annual calls was assumed to be nearly 8%, based on average of historical data on anchorage frequency for CS terminal. Anchorage duration for any particular anchorage episode was assumed to last 7.39 hours, derived from average across anchorage durations of events recorded in historical data for CS terminal.
- For future year peak days, one instance of anchorage and one of transit to anchorage were added for vessel calls predicted in the peak day scenario from the BERTHA model. Historical averages of anchorage duration were assumed for peak day event.

  China Shipping RSEIR analyzes two different scenarios, which affect OGV emissions, 1) what-if scenarios where baseline, past years and future years 2018-2045 are subject to 2008 FEIR/EIS mitigations, i.e. FEIR Mitigated, 2) scenario where future years 2023-2045 are subject to Proposed Mitigations in RSEIR, i.e. Revised Project.

The following revisions to OGV assumptions were made to reflect the Revised Project mitigations and the FEIR Mitigated Scenario.

- FEIR Mitigated Scenario:
  - 2005-2009: 70 percent of annual ship calls use AMP
  - 2010: 90 percent of annual ship calls use AMP
  - 2011, and thereafter: 100 percent of annual ship calls use AMP
  - 2009 and thereafter: 100 percent of annual vessel calls comply with VSRP.
- Revised Project Scenario: From 2019 onward
  - 95 percent of annual vessel calls use AMP when hoteling at berth;
  - 95 percent of annual vessels calls comply with VSRP of 12 knots between 40 nm from Point Fermin and the Precautionary Area.

3.2 Tugboats (Harbor Craft)

During operations, tugboats are used to assist container ships while maneuvering and docking inside the Port breakwater. The assumptions below were applied to estimate peak day and annual emissions. Harbor craft emissions are not subject to mitigations in any scenario; and thus, there is no variation between the Revised Project and the FEIR Mitigated Scenarios. Activity and emissions for tugboats are summarized in Table B1-633 to 660 in Appendix B1.

- Two tugboats were assumed for each arrival/departure assist of a container ship.

- Tugboat transit time was assumed to equal the average of container ship transit times in the harbor, multiplied by 1.3 to account for tug movement to and from base (LAHD 2018).
- Tugboat main and auxiliary engine sizes and load factors were obtained from the Port Emissions Inventories (LAHD 2018).
- Tugboat emission factors were derived based on EPA standards for marine compression-ignition engines. The applicable engine Tiers were determined based on EPA requirements for new engines, average age, and size of tugboats operating in the Port, as well as the CARB harbor craft compliance schedule (CARB 2009)
- For the 2008 baseline, 2012 and 2014, average engine model year of harbor craft fleet was obtained from the Port Inventories (LAHD 2018).
- The turnover rate of the average engine was determined according to the CARB harbor craft compliance schedule and consequently was applied to zero hour emission factors by model year and deterioration rates from CARB Harbor Craft Database to obtain composite emission rates for every future year analyzed.
- The fuel sulfur content was assumed to be 15 ppm for all analysis years, in accordance with California Diesel Fuel Regulation (CARB 2005).
- Peak activity for daily, hourly, and 8hr periods are based on vessel maneuvering transit durations for peak periods.

3.3 Drayage Trucks

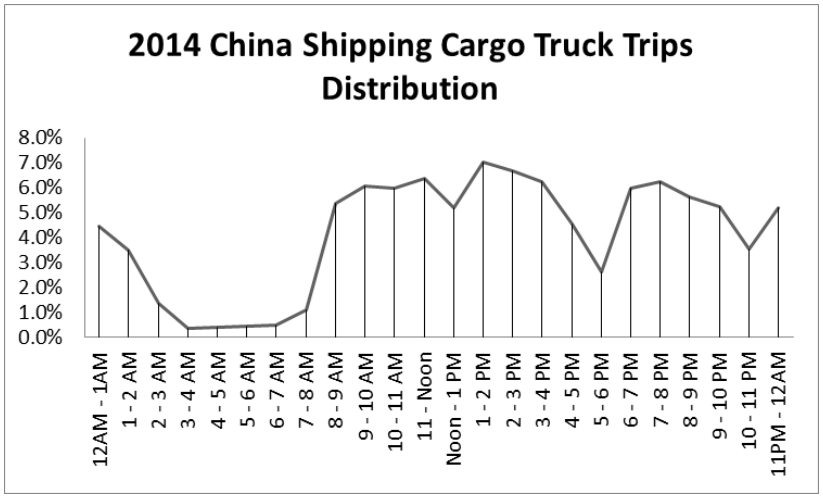
The assumptions below were applied to estimate peak day and annual emissions for drayage trucks handling cargo for the China Shipping terminal. Drayage trucks are heavy duty diesel-fueled trucks, although a small percentage of the fleet servicing POLA terminals are LNG-fueled. Emissions produced by drayage trucks are derived from their activity while driving inside the terminal (on-site), while short-term idling at gate and inside the terminal, and while driving off-site to carry cargo to off-site railyards or other destinations.

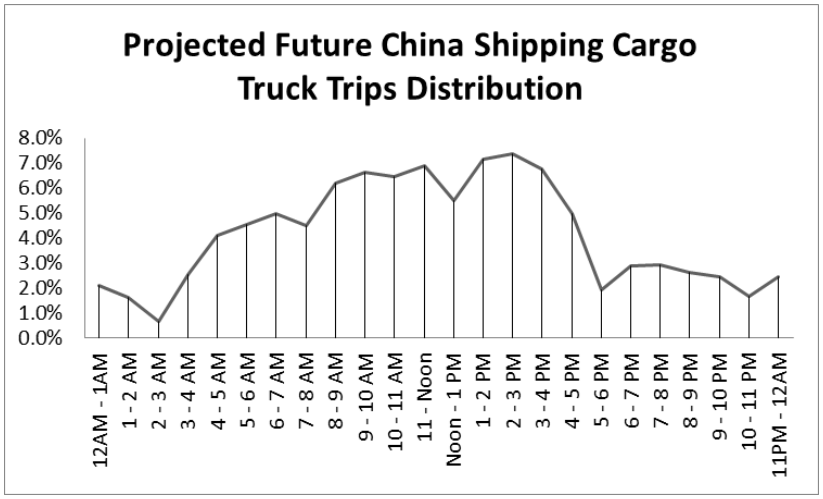
- Emissions from on-road, heavy-duty diesel trucks were calculated using emission factors generated by the EMFAC2017 on-road mobile source emission factor model (CARB, 2018). Emission factors by model year were aggregated into composite fleet-wide emission factors using the Port drayage truck fleet mix for the baseline. The predicted future mix was obtained from the Port's future year emissions inventories (POLA, 2016).
- The Port's truck fleet mix reflects the Clean Truck Program, which banned pre-1989 trucks from Port services in October 2008 and all trucks that did not meet 2007 and newer on-road heavy duty truck standards by January 1, 2012. The baseline fleet mix is presented in Table B1-392 of Appendix B1.
- Trucks fueled with liquefied natural gas (LNG) composed 8.2% of the POLA truck calls in the year 2014 (LAHD 2015). Although the percentage of alternative-fueled drayage trucks is likely to increase in future years, the fleet was conservatively assumed to remain 8.2% LNG trucks for the Revised Project scenario (as described further below). LNG trucks are subject to the same

emission standards as diesel trucks, and therefore were assumed to have the same criteria pollutant emission factors as diesel trucks. However, DPM emissions were assumed to be 5% of total PM_{10} exhaust emissions from LNG trucks to account for dual-fueled diesel/LNG trucks in the fleet.

- PM_{10} and $PM_{2.5}$ emissions from paved road dust were calculated separately and added to the EMFAC2017 emissions from truck exhaust, tire wear, and brake wear. Road dust emission factors for on-terminal driving, off-terminal local streets, and freeways followed CARB's methodology to estimate entrained road dust emission factors, using the equations in EPA's Compilation of Air Pollutant Emission Factors AP-42 (USEPA 2011) and CARB silt loading values for California roadways in its April 2014 guidance document for estimating entrained road dust emissions from paved roads (CARB 2014).
- On-site activity including idling times and on-site driving distance was obtained from the Port Inventories (LAHD 2018).
- Off-site driving activity in the form of traffic flows and miles traveled by link for China Shipping servicing trucks were obtained through traffic modeling as part of the transportation modeling study. Daily and annual truck flows in every link were derived from transportation modeling, and emissions were estimated by-link for dispersion and health risk modeling. Sum of emissions from all links composing the off-site traffic network are summarized as "off-site truck" emissions in Appendix B1, Tables B1- 661 to 676.
- Peaking factor from transportation modeling analysis of drayage trucks and gate movements determined the peak daily period for drayage trucks. A 24hr profile of activity derived from transportation modeling for drayage trucks was also used to determine 8hr and 1hr peaks by selecting the consecutive 8hr and 1hr periods with highest truck trips at the terminal. Three versions of the hourly profile were available from transportation modeling, one for the 2008 baseline analysis and 2012, one for year 2014 and one for future scenarios. Sample distribution are shown in Figure B1-A below.

Figure B1-A. China Shipping Truck Trips Time-of-Day Distribution for Year 2014 and Future.





The following revisions to truck assumptions were made to reflect the FEIR Mitigated Scenario.

- FEIR Mitigated scenario includes a mitigation for drayage trucks from the 2008 EIR/EIS document which expected that trucks entering the Berth 97-109 Terminal would be LNG fueled in the following percentages:
  - 50 percent in 2012 and 2013
  - 70 percent in 2014 through 2017
  - 100 percent in 2018 and thereafter
- The FEIR Mitigated scenarios and baseline assumes the amount of truck trips and off-site VMT travel as a would-be Revised Project scenario with the variation of the percentage of LNG trucks in the fleet to represent the mitigation measure from the previous CS 2008 EIR/EIS. Specifically, DPM emissions would be lower as a result of a larger LNG fleet percentage, given that only 5% of PM_{10} exhaust emissions from LNG trucks is considered DPM, to account for dual-fueled diesel/LNG trucks in the fleet.

  The Revised Project Scenario does not include any quantified mitigation for drayage trucks emissions.

3.4 Cargo Handling Equipment (CHE)

CHE includes yard tractors, RTG cranes, top handlers, forklifts, off-road fueling trucks and other miscellaneous equipment. The marine terminal wharf cranes used to lift containers on and off container ships are electric and, therefore, would have no direct criteria pollutant or TACs emissions (although their electricity consumption is included in electricity generation GHG emissions). CHE equipment list corresponds to entire CHE fleet at WBCT since the CHE equipment at WBCT is shared between Yang Ming and China Shipping terminals. Therefore, for purposes of the analysis the hours of usage of each equipment unit are partitioned based on terminal throughput. The following assumptions were applied to estimate peak day and annual emissions:

3.4.1 Equipment and Activity Assumptions:

- 2008 baseline, 2012 and 2014 activity consisting of equipment inventory, specifications and annual hours of operation by piece for entire WBCT were provided by Starcrest from the Port Inventories (LAHD 2018). Baseline actual equipment inventory is summarized in Table B1-1 and Table B1- 49 for FEIR Mitigated and Revised Project respectively in appendix B1.
- 2018 equipment list is based on 2017 cargo handling equipment inventory whereas other future year equipment list is based on 2016 cargo handling equipment inventory provided by WBCT. This is to account for pieces scrapped and replaced between the baseline and the time this study was prepared.
- CHE hours of operation in future analysis years were scaled using on projected terminal throughput changes in every future analysis year and baseline hours-per-TEU ratios.
- CHE model year and load factors for the 2008 baseline, 2012 and 2014 were obtained from the Port Inventories. 2014 analysis year load factors were assumed constant in future years analyzed.
- Emission controls in 2008 baseline, 2012 and 2014 equipment were obtained from the Port Inventories (LAHD 2018).
- Peaking factor from traffic modeling analysis of trucks and gate movements was used to derive peak daily activity for CHE under the assumption that both CHE and drayage trucks peak activity periods are concurrent. The 24hr profiles of activity for drayage trucks was also used to determine 8hr and 1hr peaks the same way it was done for drayage trucks by selecting highest consecutive peak periods of 8hr and maximum 1hr peak.

3.4.2 Emission Factors Assumptions:

- Emission factors used to estimate emissions for CHE equipment are selected based on the equipment description, horsepower range, model year and age of equipment at analyzed year and fuel type. CHE is grouped in these characteristics or bins, and thus emission rates are found for each bin combination.
- Emission factors were calculated for every analysis year and scenario conditions for the CHE fleet characteristics in terms of model years (MY) and fuel type/technology. Every equipment piece that is subject to CARB's CHE Regulations is turned over based on ARB compliance schedule requirements for CHE (CARB, 2012). Any further mitigation is applied on top of or replacing CHE rule requirements when more stringent.
- Emission factors were derived from CARB's CHE inventory model, i.e. CHEI (CARB, 2015a) and used for diesel equipment. Because CHEI model only provides rates for VOC, CO, NOX, PM10, and PM25; ARB's Offroad2007 model was used to complement emission factors for other pollutants and greenhouse gases.
- Calendar year 2045 is not available in Offroad2007 so the emission rates from CY2040 were used, which is the latest year available

- For LPG-fueled equipment, zero hour and deterioration rate emission factors were obtained from CARB.
- For CNG yard tractors meeting the ultra-low NOx standard of 0.02 g/bhp-hr, deteriorated emission rates from FTP-test CARB certification data was obtained from manufacturers. The rates for NOx and other criteria pollutant, and GHGs from this certification data was used to represent yard tractors mitigated under the Revised Project.
- For electric CHE equipment, on-site exhaust emissions were assumed zero emissions for all pollutants. Diesel-hybrid equipment was assumed to use same emission factors as diesel equipment, but engine horsepower was typically much smaller, thus producing lower emissions than a comparable diesel unit.
- Emission factors for LNG-fueled yard tractors are assumed to be the same as diesel equivalent equipment of the same Tier but with zero DPM emissions. Diesel emission rates were used as surrogate since no LNG-specific emission rates for CHE were available. These are used in the mitigations of the FEIR Mitigated Scenario.
- The fuel sulfur content was assumed to be 15 ppm for all analysis years, in accordance with California Diesel Fuel Regulation (CARB 2005).

The following additional revisions to CHE assumptions were made to reflect the Revised Project mitigations and the FEIR Mitigated Scenario.

- FEIR Mitigated scenario assumes the growth in hours of operation and equipment list following the annual throughput forecast for the terminal but equipment characteristics such as model year and fuel type, and therefore, emission rates are updated based on mitigation measures from the previous CS 2008 EIR/EIS. Specifically following the mitigation requirement shown below.

Table B1-D: 2008 EIR/EIS Mitigation Replacement Schedule for CHE

2008 EIR/EIS Measure Name	Mitigation Language
AQ-15: Yard Tractors at Berth 97-109 Terminal	All yard tractors operated at the Berth 97-109 terminal shall run on alternative fuel (LPG) beginning September 30, 2004, until December 31, 2014 (ASJ Requirement). Beginning in January 1, 2015, all yard tractors operated at the Berth 97-109 terminal shall be the cleanest available NOX alternative-fueled engine meeting 0.015 gm/hp-hr for PM.
AQ-16: Yard Equipment at Berth 121-131 Rail Yard	All diesel-powered equipment operated at the Berth 121-131 terminal rail yard that handles containers moving through the Berth 97-109 terminal shall implement the following measures: • Beginning January 1, 2009, all equipment purchases shall be either (1) the cleanest available NOX alternative-fueled engine meeting 0.015 gm/hp-hr for PM or (2) the cleanest available NOX diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines available that meet 0.0150 gm/hp-hr for PM, the new engines shall be

2008 EIR/EIS Measure Name	Mitigation Language
	the cleanest available (either fuel type) and will have the cleanest VDECS. • By the end of 2012, all equipment less than 750 hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. • By the end of 2014, all equipment shall meet USEPA Tier 4 non-road engine standards.
AQ-17: Yard Equipment at Berth 97-109 Terminal	September 30, 2004: All diesel-powered toppicks and sidepicks operated at the Berth 97-109 terminal shall run on emulsified diesel fuel plus a DOC (ASJ Requirement). • January 1, 2009: ○ All RTGs shall be electric. ○ All toppicks shall have the cleanest available NOX alternative fueled engines meeting 0.015 gm/hp-hr for PM. ○ All equipment purchases other than yard tractors, RTGs, and toppicks shall be either (1) the cleanest available NOX alternative-fueled engine meeting 0.015 gm/hp-hr for PM or (2) the cleanest available NOX diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines available that meet 0.015 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDEC. • By the end of 2012: all terminal equipment less than 750 hp other than yard tractors, RTGs, and toppicks shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. • By the end of 2014: all terminal equipment other than yard tractors, RTGs, and top-picks shall meet USEPA Tier 4 non-road engine standards. In addition to the above requirements, the tenant at Berth 97-109 shall participate in a 1-year electric yard tractor [truck] pilot project. As part of the pilot project, two electric tractors will be deployed at the terminal within 1 year of lease approval. If the pilot project is successful in terms of operation, costs and availability, the tenant shall replace half of the Berth 97-109 yard tractors with electric tractors within 5 years of the feasibility determination.

After FEIR mitigation-related replacements, CHE characteristics (age/model years) analyzed in future years are based on turnover based on mean useful life assumptions from CARB.

- Revised Project Scenario assumes the growth in hours of operation and equipment list following the annual throughput forecast for the terminal but includes effects of Revised Project mitigations from current SEIR. Specifically following the replacement schedule shown below.

Table B1-E: Proposed Mitigation Replacement Schedule for CHE (Revised Project)

Equipment Inventory in 2016	HP	Fuel Type	Model Year	Quantity (WBCT)	Proposed Mitigation Replacement	Replacement Scheduled for
Forklift up to 18 tons	137	Diesel	2007	1	Tier 4 diesel, or potentially any alternative fuel meeting Tier 4	2022
Forklift up to 18 tons	152	Diesel	2004	2	Tier 4 diesel, or potentially any alternative fuel meeting Tier 4	2020
Forklift up to 18 tons	152	Diesel	2005	2	Tier 4 diesel, or potentially any alternative fuel meeting Tier 4	2021
Forklift up to 5 tons	75	LPG	2011	1	Upgrade to electric	2021
Forklift up to 5 tons	160	LPG	2005	2	Upgrade to electric	2021
Forklift up to 5 tons	160	LPG	2008	2	Upgrade to electric	2021
Forklift up to 5 tons	165	LPG	2002	2	Upgrade to electric	2021
Rub-trd Gantry Crane	454	Diesel	2004	2	Tier 4 hybrid	2024
Rub-trd Gantry Crane	612	Diesel	2003	8	Tier 4 hybrid	2022
Rub-trd Gantry Crane	685	Diesel	2005	5	Upgrade 4 electric, 1 Tier 4 hybrid	2026
Rub-trd Gantry Crane	197	Eco Crane	2011	1	no additional mitigation required, assumed to turn over by end of life	na
Rub-trd Gantry Crane	197	Hybrid	2015	5	no additional mitigation required, assumed to turn over by end of life	na
Top handler	250	Diesel	2002	8	Tier 4 diesel	2020
Top handler	260	Diesel	2006	3	Tier 4 diesel	2020
Top handler	260	Diesel	2007	8	Tier 4 diesel	2022
Top handler	260	Diesel	2008	15	Tier 4 diesel	2024
Top handler	335	Diesel	2011	3	Tier 4 diesel	2024
Top handler	370	Diesel	2014	1	Tier 4 diesel	2024
Yard tractor	195	LPG	2004	53	alternative-fuel units that meet or are lower than a NOx emission rate of 0.02 g/bhp-hr and Tier 4 final off-road emission rates for other criteria pollutants	2020

Equipment Inventory in 2016	HP	Fuel Type	Model Year	Quantity (WBCT)	Proposed Mitigation Replacement	Replacement Scheduled for
Yard tractor	195	LPG	2007	59	alternative-fuel units that meet or are lower than a NOx emission rate of 0.02 g/bhp-hr and Tier 4 final off-road emission rates for other criteria pollutants	2020
Yard tractor	195	LPG	2008	43	alternative-fuel units that meet or are lower than a NOx emission rate of 0.02 g/bhp-hr and Tier 4 final off-road emission rates for other criteria pollutants	2024
Yard tractor	231	LPG	2011	23	alternative-fuel units that meet or are lower than a NOx emission rate of 0.02 g/bhp-hr and Tier 4 final off-road emission rates for other criteria pollutants	2024
Sweeper	100	Diesel	2005	1	alternative fuel or the cleanest available	2025

3.5 Rail – Switchers and Linehaul Locomotives

China Shipping terminal generates train trips to and from the on-dock rail yard at WBCT intermodal railyard, as well as in near- and off-dock rail yards. Containers arriving and departing via a near- or off-dock rail yard are transported between the terminal and rail yard by drayage trucks. Emissions associated with hauling containers by rail include diesel exhaust from PHL locomotives performing switching activities at the WBCT on-dock rail yard, switcher locomotives performing switching activities at the near- and off-dock rail yards, and line-haul locomotive transport within the SCAB and idling at the rail yards. No other activities within the near-dock or off-dock railyards were included in the emission analysis.

The assumptions below were applied to estimate peak day and annual emissions.

- Switcher and line haul locomotive emissions were calculated with emissions factors for locomotives by engine Tier level used in the Port 2013 Emissions Inventory (LADH 2014). These emission factors are based on EPA emission rates, except for VOC, NO_X, and PM_{10} NO_X for calendar years 2008 through 2015. These were modified to reflect compliance with the 1998 MOU, by which the railroads agreed to meet specified fleet-wide average emission rates from

their line haul and switching locomotives operating in the SoCAB, on a weighted average basis (LAHD 2014).

- Emission factors by Tier were combined into composite fleetwide average using the fleet mix percentages obtained through CARB Vision 2.0 Locomotive Module (CARB, 2015b). The 2014 fleet mix for the line-haul locomotive fleet was obtained from the Port 2014 Inventory (LAHD 2015) and baseline 2008, 2012 and all future years used Vision Module-derived fleet mix for each year. The 2008, baseline, 2012 and 2014 fleet mix for PHL switchers were obtained from the Port Inventories (LAHD 2018) and it was conservatively assumed to remain constant as 2014 through 2045 since the 2014 fleet mix indicated the engines were composed of Tier 3 and Genset switcher engines; it is likely these would not be replaced by 2045 based on the equipment longevity, unless required.
- The fuel sulfur content was assumed to be 15 ppm for all analysis years, in accordance with California Diesel Fuel Regulation (CARB 2005).
- The transportation study for this SEIR provides the train and locomotive activity data used in the emission calculations based on annual throughput and mode splits for China Shipping railyard. The data includes average daily train counts, train length, number of locomotives per train, and average daily train-miles within the SCAB.
- Baseline train visits for line-haul locomotives at WBCT are shown in Table B1-166. Similar tables for other analysis years are included in rail section of Appendix B1.
- Rail modeling also includes fractional activity of line-haul trains transporting container boxes from the CS terminal to near and off dock railyards via drayage trucks. These fractional trips are summarized in Table B1-168 for the baseline. Similar tables for other analysis years are included in rail section of Appendix B1.
- Line haul locomotives were assumed to operate at the EPA line haul duty cycle, which reflects an average engine load factor.
- Switch engine locomotives were assumed to operate at the EPA switch locomotive duty cycle, which reflects an average engine load factor.
- Peak activity periods in railyard cargo loading and the drayage trucks are concurrent according to transportation modeling, so the annual-to-peak day peaking factor derived from transportation modeling of trucks was also used for determining the rail activity peak day for lineal and switchers. The 24hr profile of activity for drayage trucks was also used to determine 8hr and 1hr peaks for rail activity.

3.6 Worker Commute Trips

Worker vehicle emissions consist of light duty on-road vehicles used for workers commuting to and from the China Shipping terminal. Activities tracked consist of off-site driving to/from terminal, on-site driving to employee parking lot and vehicle starts. On-site idling from worker vehicles was assumed to be negligible.

- Emissions from worker trips during the proposed project operation were calculated using worker trip on-site and off-site traffic flows by link provided by the traffic consultant.
- Emission factors from EMFAC2017 for gasoline light duty vehicles were used to represent worker vehicle emissions (CARB, 2018). The South Coast default light duty vehicle fleet mix was used for the emission factor derivation.
- PM_{10} and $PM_{2.5}$ emissions from paved road dust were calculated and added to the EMFAC2017 emissions. Road dust emission factors for on-terminal driving, off-terminal local streets, and freeways followed CARB's methodology to estimate entrained road dust emission factors; this involves using the equations in EPA's Compilation of Air Pollutant Emission Factors AP-42 (USEPA 2011) and CARB silt loading values for California roadways in its April 2014 guidance document for estimating entrained road dust emissions from paved roads (CARB 2014).

4.0 References

CARB, 2005. Final Regulation Order. Proposed Extension of the California Standards for Motor Vehicle Diesel Fuel to Diesel Fuel Used for Intrastate Diesel-Electric Locomotives and Harbor Craft. August.

CARB, 2007. Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port. December. Available: http://www.arb.ca.gov/regact/2007/shorepwr07/shorepwr07.htm

CARB, 2009. Compliance Guideline for the Commercial Harbor Craft Regulation. January. Available at https://www.arb.ca.gov/ports/marinevess/documents/chccomplianceguideline.pdf

CARB, 2011. Rulemaking to Consider Proposed Amendments to the Regulations for Fuel Sulfur and Other Operational Requirements for Ocean-going Vessels Within California Waters and 24 Nautical Miles of the California Baseline. May. Available in https://www.arb.ca.gov/regact/2008/fuelogv08/fro13.pdf

CARB, 2012. Regulation For Mobile Cargo Handling Equipment At Ports And Intermodal Rail Yards. Final Regulation Order. October 14. Available at http://www.arb.ca.gov/regact/2011/cargo11/finalfro.pdf

CARB, 2014. Miscellaneous Process Methodology 7.9 – Entrained Road Travel, Paved Road Dust. Available at https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf

CARB, 2015a. Cargo Handling Equipment 2011 Inventory Model. Mobile Source Emission Inventory. Available: https://www.arb.ca.gov/msei/categories.htm

CARB, 2015b. 2015 Vision 2.0 Locomotive Module. Available at https://www.arb.ca.gov/planning/vision/downloads.htm#2015vision2lr

CARB, 2018. EMFAC2017 release date and download location. Mobile Source Emissions Inventory. Available at: https://www.arb.ca.gov/msei/msei.htm

CARB, 2018a. "EMFAC2017 Volume III – Technical Documentation v1.0.2" California Air Resources Board, July 20. Available at https://www.arb.ca.gov/msei/downloads/emfac2017-volume-iii-technical-documentation.pdf

LAHD, 2014. Port of Los Angeles Inventory of Air Emissions – 2013. July. Prepared by Starcrest Consulting Group, LLC. Available: https://www.portoflosangeles.org/pdf/2013_Air_Emissions_Inventory_Full_Report.pdf

LAHD, 2015. Port of Los Angeles Inventory of Air Emissions – 2014. September. Prepared by Starcrest Consulting Group, LLC. Available: https://www.portoflosangeles.org/pdf/2014_Air_Emissions_Inventory_Full_Report.pdf

LAHD, 2016. Port of Los Angeles Inventory of Air Emissions – 2015. July. Prepared by Starcrest Consulting Group, LLC. Available: https://www.portoflosangeles.org/pdf/2015_Air_Emissions_Inventory.pdf

LAHD, 2018. Port of Los Angeles Inventories of Air Emissions Prepared by Starcrest Consulting Group, LLC. Available: https://www.portoflosangeles.org/environment/progress/resources/air-emissions-inventory-reports/

POLA, 2015. *POLA CEQA Terminal Level Container Ship Forecast for Tier 3 Engines – Final.* August.

USEPA. 2011. AP-42 Compilation of Air Pollutant Emission Factors, Chapter 13.2.1 Miscellaneous Sources - Fugitive Dust Sources - Paved Roads. Available at: http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf. Accessed May 2015.

Cargo Handling Equipment (CHE)

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2008

Table B1-1. 2008 FEIR Mitigated Scenario - CHE equipment list

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Electric Wharf Crane	(blank)	(blank)	Electric	(blank)	9		0%	-	0%	0%	0%
Forklift	160	2005	LPG	0.3	3		0%	366	0%	0%	0%
Forklift	160	2008	LPG	0.3	2		0%	176	0%	0%	0%
Forklift	165	1995	LPG	0.3	2		0%	17	0%	0%	0%
Forklift	165	2002	LPG	0.3	2		0%	138	0%	0%	0%
Forklift	152	1994	Diesel	0.3	1		0%	83	0%	0%	0%
Forklift	152	2004	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	152	2005	Diesel	0.3	2		0%	726	0%	0%	0%
Forklift	190	1997	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	190	1999	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	190	2004	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	215	1993	Diesel	0.3	1		0%	363	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2		0%	1,150	0%	0%	0%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8		0%	2,023	0%	0%	0%
Rub-trd Gantry Crane	685	1999	Diesel	0.2	1		0%	12	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	6		0%	4,015	0%	0%	0%
Rub-trd Gantry Crane	180	1983	Diesel	0.2	2		0%	7	0%	0%	0%
Rub-trd Gantry Crane	180	1984	Diesel	0.2	1		0%	1	0%	0%	0%
Top handler	250	1997	Diesel	0.59	5	DOC	100%	778	30%	70%	70%
Top handler	250	2002	Diesel	0.59	9	DOC	100%	6,556	30%	70%	70%
Top handler	250	1990	Diesel	0.59	4	DOC	100%	1,786	30%	70%	70%
Top handler	260	2006	Diesel	0.59	6	DOC	100%	5,484	30%	70%	70%
Yard tractor	174	2000	LPG	0.39	2		0%	92	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	21,671	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	31,225	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	19,704	0%	0%	0%
Truck	250	2005	Diesel	0.51	2		0%	516	0%	0%	0%
Truck	250	2008	Diesel	0.51	1		0%	138	0%	0%	0%
Sweeper	100	1995	Diesel	0.68	1		0%	32	0%	0%	0%
Sweeper	100	2005	Diesel	0.68	1		0%	83	0%	0%	0%
Man Lift	80	1995	Diesel	0.51	2		0%	148	0%	0%	0%
Side pick	152	1990	Diesel	0.59	1	DOC	100%	0	30%	70%	70%
Side pick	152	1996	Diesel	0.59	1	DOC	100%	0	30%	70%	70%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-2. 2008 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2008_Electric Wharf Crane_Electric_(blank	-	-	-	-	-	-	-	-	-
2008_Forklift_LPG_160_2005	0.286	17.683	1.946	0.060	0.060	-	674.859	0.084	-
2008_Forklift_LPG_160_2008	0.108	2.375	1.040	0.060	0.060	-	674.859	0.021	-
2008_Forklift_LPG_165_1995	1.397	17.030	10.574	0.060	0.060	-	674.859	0.213	-
2008_Forklift_LPG_165_2002	1.207	17.636	8.651	0.060	0.060	-	674.859	0.145	-
2008_Forklift_Diesel_152_1994	0.830	2.945	8.202	0.342	0.315	0.010	852.465	0.172	-
2008_Forklift_Diesel_152_2004	0.370	3.057	4.831	0.206	0.190	0.010	852.476	0.074	-
2008_Forklift_Diesel_152_2005	0.277	2.986	4.454	0.166	0.152	0.010	852.445	0.056	-
2008_Forklift_Diesel_190_1997	0.524	1.212	7.575	0.196	0.181	0.010	852.438	0.081	-
2008_Forklift_Diesel_190_1999	0.493	1.163	7.300	0.184	0.169	0.010	852.453	0.081	-
2008_Forklift_Diesel_190_2004	0.269	1.042	4.685	0.112	0.103	0.010	852.451	0.056	-
2008_Forklift_Diesel_215_1993	1.247	3.842	10.410	0.592	0.544	0.010	852.372	0.172	-
2008_Rub-trd Gantry Crane_Diesel_454_20	0.323	1.064	4.503	0.125	0.115	0.008	852.735	0.047	-
2008_Rub-trd Gantry Crane_Diesel_612_20	0.253	1.002	4.546	0.110	0.101	0.008	840.339	0.053	-
2008_Rub-trd Gantry Crane_Diesel_685_19	0.341	0.926	5.959	0.122	0.112	0.009	845.926	0.073	-
2008_Rub-trd Gantry Crane_Diesel_685_20	0.313	1.057	4.482	0.123	0.113	0.009	864.986	0.042	-
2008_Rub-trd Gantry Crane_Diesel_180_19	1.006	4.340	10.314	0.406	0.374	0.010	853.645	0.238	-
2008_Rub-trd Gantry Crane_Diesel_180_19	0.994	4.311	10.254	0.399	0.367	0.010	853.026	0.238	-
2008_Top handler_Diesel_250_1997	0.507	1.185	7.425	0.189	0.174	0.010	852.373	0.081	-
2008_Top handler_Diesel_250_2002	0.557	1.263	7.865	0.210	0.193	0.010	852.779	0.074	-
2008_Top handler_Diesel_250_1990	2.016	5.498	14.487	1.052	0.968	0.010	854.180	0.173	-
2008_Top handler_Diesel_260_2006	0.319	1.106	4.610	0.123	0.113	0.008	851.207	0.032	-
2008_Yard tractor_LPG_174_2000	1.417	17.506	10.632	0.060	0.060	-	674.859	0.215	-
2008_Yard tractor_LPG_195_2004	0.941	21.968	4.990	0.060	0.060	-	674.859	0.102	-
2008_Yard tractor_LPG_195_2007	0.450	19.048	2.358	0.060	0.060	-	674.859	0.027	-
2008_Yard tractor_LPG_195_2008	0.158	2.392	1.057	0.060	0.060	-	674.859	0.021	-
2008_Truck_Diesel_250_2005	0.201	0.991	4.328	0.102	0.093	0.010	852.036	0.040	-
2008_Truck_Diesel_250_2008	0.115	0.929	2.334	0.090	0.083	0.010	852.493	0.022	-
2008_Sweeper_Diesel_100_1995	1.102	3.604	8.369	0.541	0.498	0.010	852.463	0.251	-
2008_Sweeper_Diesel_100_2005	0.323	3.216	5.021	0.247	0.228	0.010	852.435	0.069	-
2008_Man Lift_Diesel_80_1995	1.182	3.757	8.681	0.601	0.553	0.010	852.460	0.251	-
2008_Side pick_Diesel_152_1990	0.717	2.701	7.601	0.274	0.252	0.010	852.398	0.172	-
2008_Side pick_Diesel_152_1996	0.716	2.701	7.600	0.274	0.252	0.010	852.414	0.172	-

Table B1-3. 2008 FEIR Mitigated Scenario Annual Mass Emissions

		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2008_Electric Wharf Crane_Electric		-	-	-	-	-	-	-	-	-	-
2008_Forklift_LPG	17,570	0.01	0.34	0.04	0.00	0.00	-	13	0.00	-	-
2008_Forklift_LPG	8,471	0.00	0.02	0.01	0.00	0.00	-	6	0.00	-	-
2008_Forklift_LPG	863	0.00	0.02	0.01	0.00	0.00	-	1	0.00	-	-
2008_Forklift_LPG	6,813	0.01	0.13	0.06	0.00	0.00	-	5	0.00	-	-
2008_Forklift_Diesel	3,792	0.00	0.01	0.03	0.00	0.00	0.00	4	0.00	-	0.00
2008_Forklift_Diesel	16,559	0.01	0	0.09	0.00	0.00	0.00	16	0.00	-	0.00
2008_Forklift_Diesel	33,119	0.01	0.11	0.16	0.01	0.01	0.00	31.12	0.00	-	0.01
2008_Forklift_Diesel	20,699	0.01	0.03	0.17	0.00	0.00	0.00	19.45	0.00	-	0.00
2008_Forklift_Diesel	20,699	0.01	0.03	0.17	0.00	0.00	0.00	19.45	0.00	-	0.00
2008_Forklift_Diesel	20,699	0.01	0.02	0.11	0.00	0.00	0.00	19.45	0.00	-	0.00
2008_Forklift_Diesel	23,423	0.03	0.10	0.27	0.02	0.01	0.00	22.01	0.00	-	0.02
2008_Rub-trd Gantry Crane_Diesel	104,460	0.04	0.12	0.52	0.01	0.01	0.00	98.19	0.01	-	0.01
2008_Rub-trd Gantry Crane_Diesel	247,580	0.07	0.27	1.24	0.03	0.03	0.00	229.33	0.01	-	0.03
2008_Rub-trd Gantry Crane_Diesel	1,692	0.00	0.00	0.01	0.00	0.00	0.00	1.58	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	549,995	0.19	0.64	2.72	0.07	0.07	0.01	524.40	0.03	-	0.07
2008_Rub-trd Gantry Crane_Diesel	261	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	52	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	-	0.00
2008_Top handler_Diesel	114,787	0.02	0.04	0.94	0.02	0.02	0.00	107.85	0.01	-	0.02
2008_Top handler_Diesel	966,988	0.18	0.40	8.38	0.16	0.14	0.01	908.98	0.08	-	0.16
2008_Top handler_Diesel	263,481	0.18	0.48	4.21	0.21	0.20	0.00	248.08	0.05	-	0.21
2008_Top handler_Diesel	841,278	0.09	0.31	4.28	0.08	0.07	0.01	789.35	0.03	-	0.08
2008_Yard tractor_LPG	6,259	0.01	0.12	0.07	0.00	0.00	-	4.66	0.00	-	-
2008_Yard tractor_LPG	1,648,109	1.71	39.91	9.07	0.11	0.11	-	1,226.02	0.18	-	-
2008_Yard tractor_LPG	2,374,689	1.18	49.86	6.17	0.16	0.16	-	1,766.51	0.07	-	-
2008_Yard tractor_LPG	1,498,452	0.26	3.95	1.75	0.10	0.10	-	1,114.69	0.03	-	-
2008_Truck_Diesel	65,840	0.01	0.07	0.31	0.01	0.01	0.00	61.84	0.00	-	0.01
2008_Truck_Diesel	17,548	0.00	0.02	0.05	0.00	0.00	0.00	16.49	0.00	-	0.00
2008_Sweeper_Diesel	2,173	0.00	0.01	0.02	0.00	0.00	0.00	2.04	0.00	-	0.00
2008_Sweeper_Diesel	5,630	0.00	0.02	0.03	0.00	0.00	0.00	5.29	0.00	-	0.00
2008_Man Lift_Diesel	6,045	0.01	0.03	0.06	0.00	0.00	0.00	5.68	0.00	-	0.00
2008_Side pick_Diesel	33	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	-	0.00
2008_Side pick_Diesel	33	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	-	0.00

Table B1-4. 2008 FEIR Mitigated Scenario Peak Day Emissions

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2008_Electric Wharf Crane_Electric	0.0043	-	-	-	-	-	-	-	-	-	-
2008_Forklift_LPG	0.0043	0.05	2.92	0.32	0.01	0.01	-	112	0.01	-	-
2008_Forklift_LPG	0.0043	0.01	0.19	0.08	0.00	0.00	-	54	0.00	-	-
2008_Forklift_LPG	0.0043	0.01	0.14	0.09	0.00	0.00	-	5	0.00	-	-
2008_Forklift_LPG	0.0043	0.08	1.13	0.55	0.00	0.00	-	43	0.01	-	-
2008_Forklift_Diesel	0.0043	0.03	0.11	0.29	0.01	0.01	0.00	30	0.01	-	0.01
2008_Forklift_Diesel	0.0043	0.06	0	0.75	0.03	0.03	0.00	133	0.01	-	0.03
2008_Forklift_Diesel	0.0043	0.09	0.93	1.39	0.05	0.05	0.00	265.77	0.02	-	0.05
2008_Forklift_Diesel	0.0043	0.10	0.24	1.48	0.04	0.04	0.00	166.10	0.02	-	0.04
2008_Forklift_Diesel	0.0043	0.10	0.23	1.42	0.04	0.03	0.00	166.11	0.02	-	0.04
2008_Forklift_Diesel	0.0043	0.05	0.20	0.91	0.02	0.02	0.00	166.11	0.01	-	0.02
2008_Forklift_Diesel	0.0043	0.27	0.85	2.30	0.13	0.12	0.00	187.94	0.04	-	0.13
2008_Rub-trd Gantry Crane_Diesel	0.0043	0.32	1.05	4.43	0.12	0.11	0.01	838.54	0.05	-	0.12
2008_Rub-trd Gantry Crane_Diesel	0.0043	0.59	2.34	10.60	0.26	0.24	0.02	1,958.53	0.12	-	0.26
2008_Rub-trd Gantry Crane_Diesel	0.0043	0.01	0.01	0.09	0.00	0.00	0.00	13.47	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	0.0043	1.62	5.47	23.20	0.64	0.59	0.05	4,478.45	0.22	-	0.64
2008_Rub-trd Gantry Crane_Diesel	0.0043	0.00	0.01	0.03	0.00	0.00	0.00	2.10	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	0.0043	0.00	0.00	0.01	0.00	0.00	0.00	0.42	0.00	-	0.00
2008_Top handler_Diesel	0.0043	0.16	0.38	8.02	0.14	0.13	0.01	921.05	0.09	-	0.14
2008_Top handler_Diesel	0.0043	1.52	3.45	71.59	1.34	1.23	0.09	7,762.78	0.68	-	1.34
2008_Top handler_Diesel	0.0043	1.50	4.09	35.93	1.83	1.68	0.02	2,118.64	0.43	-	1.83
2008_Top handler_Diesel	0.0043	0.76	2.63	36.51	0.68	0.63	0.07	6,741.15	0.26	-	0.68
2008_Yard tractor_LPG	0.0043	0.08	1.03	0.63	0.00	0.00	-	39.76	0.01	-	-
2008_Yard tractor_LPG	0.0043	14.59	340.83	77.42	0.93	0.93	-	10,470.29	1.58	-	-
2008_Yard tractor_LPG	0.0043	10.07	425.81	52.71	1.33	1.33	-	15,086.19	0.60	-	-
2008_Yard tractor_LPG	0.0043	2.23	33.74	14.91	0.84	0.84	-	9,519.53	0.30	-	-
2008_Truck_Diesel	0.0043	0.12	0.61	2.68	0.06	0.06	0.01	528.09	0.02	-	0.06
2008_Truck_Diesel	0.0043	0.02	0.15	0.39	0.01	0.01	0.00	140.82	0.00	-	0.01
2008_Sweeper_Diesel	0.0043	0.02	0.07	0.17	0.01	0.01	0.00	17.44	0.01	-	0.01
2008_Sweeper_Diesel	0.0043	0.02	0.17	0.27	0.01	0.01	0.00	45.18	0.00	-	0.01
2008_Man Lift_Diesel	0.0043	0.07	0.21	0.49	0.03	0.03	0.00	48.51	0.01	-	0.03
2008_Side pick_Diesel	0.0043	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	-	0.00
2008_Side pick_Diesel	0.0043	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	-	0.00

8hr/24hr Peaking Factor*: 0.619386395

**Note: Using same peaking factor that is applied to trucks*

Table B1-5. 2008 FEIR Mitigated Scenario Eight Hour Peak Emissions

	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2008_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-	-
2008_Forklift_LPG	0.03	1.81	0.20	0.01	0.01	-	69	0.01	-	-
2008_Forklift_LPG	0.01	0.12	0.05	0.00	0.00	-	33	0.00	-	-
2008_Forklift_LPG	0.01	0.09	0.05	0.00	0.00	-	3	0.00	-	-
2008_Forklift_LPG	0.05	0.70	0.34	0.00	0.00	-	27	0.01	-	-
2008_Forklift_Diesel	0.02	0.07	0.18	0.01	0.01	0.00	19	0.00	-	0.01
2008_Forklift_Diesel	0.04	0	0.47	0.02	0.02	0.00	82	0.01	-	0.02
2008_Forklift_Diesel	0.05	0.58	0.86	0.03	0.03	0.00	164.61	0.01	-	0.03
2008_Forklift_Diesel	0.06	0.15	0.91	0.02	0.02	0.00	102.88	0.01	-	0.02
2008_Forklift_Diesel	0.06	0.14	0.88	0.02	0.02	0.00	102.88	0.01	-	0.02
2008_Forklift_Diesel	0.03	0.13	0.57	0.01	0.01	0.00	102.88	0.01	-	0.01
2008_Forklift_Diesel	0.17	0.52	1.42	0.08	0.07	0.00	116.41	0.02	-	0.08
2008_Rub-trd Gantry Crane_Diesel	0.20	0.65	2.74	0.08	0.07	0.01	519.38	0.03	-	0.08
2008_Rub-trd Gantry Crane_Diesel	0.37	1.45	6.56	0.16	0.15	0.01	1,213.09	0.08	-	0.16
2008_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.06	0.00	0.00	0.00	8.34	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	1.01	3.39	14.37	0.39	0.36	0.03	2,773.89	0.14	-	0.39
2008_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.02	0.00	0.00	0.00	1.30	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	-	0.00
2008_Top handler_Diesel	0.10	0.24	4.97	0.09	0.08	0.01	570.49	0.05	-	0.09
2008_Top handler_Diesel	0.94	2.14	44.34	0.83	0.76	0.05	4,808.16	0.42	-	0.83
2008_Top handler_Diesel	0.93	2.53	22.26	1.13	1.04	0.01	1,312.26	0.27	-	1.13
2008_Top handler_Diesel	0.47	1.63	22.62	0.42	0.39	0.04	4,175.38	0.16	-	0.42
2008_Yard tractor_LPG	0.05	0.64	0.39	0.00	0.00	-	24.63	0.01	-	-
2008_Yard tractor_LPG	9.04	211.10	47.95	0.57	0.57	-	6,485.16	0.98	-	-
2008_Yard tractor_LPG	6.23	263.74	32.65	0.83	0.83	-	9,344.18	0.37	-	-
2008_Yard tractor_LPG	1.38	20.90	9.24	0.52	0.52	-	5,896.27	0.18	-	-
2008_Truck_Diesel	0.08	0.38	1.66	0.04	0.04	0.00	327.09	0.02	-	0.04
2008_Truck_Diesel	0.01	0.10	0.24	0.01	0.01	0.00	87.23	0.00	-	0.01
2008_Sweeper_Diesel	0.01	0.05	0.11	0.01	0.01	0.00	10.80	0.00	-	0.01
2008_Sweeper_Diesel	0.01	0.11	0.16	0.01	0.01	0.00	27.98	0.00	-	0.01
2008_Man Lift_Diesel	0.04	0.13	0.31	0.02	0.02	0.00	30.05	0.01	-	0.02
2008_Side pick_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	-	0.00
2008_Side pick_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	-	0.00

1hr/24hr Peaking Factor*: 0.088599477

**Note: Using same peaking factor that is applied to trucks*

Table B1-6. 2008 FEIR Mitigated Scenario One Hour Peak Emissions

	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2008_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-	-
2008_Forklift_LPG	0.00	0.26	0.03	0.00	0.00	-	10	0.00	-	-
2008_Forklift_LPG	0.00	0.02	0.01	0.00	0.00	-	5	0.00	-	-
2008_Forklift_LPG	0.00	0.01	0.01	0.00	0.00	-	0	0.00	-	-
2008_Forklift_LPG	0.01	0.10	0.05	0.00	0.00	-	4	0.00	-	-
2008_Forklift_Diesel	0.00	0.01	0.03	0.00	0.00	0.00	3	0.00	-	0.00
2008_Forklift_Diesel	0.01	0	0.07	0.00	0.00	0.00	12	0.00	-	0.00
2008_Forklift_Diesel	0.01	0.08	0.12	0.00	0.00	0.00	23.55	0.00	-	0.00
2008_Forklift_Diesel	0.01	0.02	0.13	0.00	0.00	0.00	14.72	0.00	-	0.00
2008_Forklift_Diesel	0.01	0.02	0.13	0.00	0.00	0.00	14.72	0.00	-	0.00
2008_Forklift_Diesel	0.00	0.02	0.08	0.00	0.00	0.00	14.72	0.00	-	0.00
2008_Forklift_Diesel	0.02	0.08	0.20	0.01	0.01	0.00	16.65	0.00	-	0.01
2008_Rub-trd Gantry Crane_Diesel	0.03	0.09	0.39	0.01	0.01	0.00	74.29	0.00	-	0.01
2008_Rub-trd Gantry Crane_Diesel	0.05	0.21	0.94	0.02	0.02	0.00	173.52	0.01	-	0.02
2008_Rub-trd Gantry Crane_Diesel	0.00	0.00	0.01	0.00	0.00	0.00	1.19	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	0.14	0.48	2.06	0.06	0.05	0.00	396.79	0.02	-	0.06
2008_Rub-trd Gantry Crane_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	-	0.00
2008_Top handler_Diesel	0.01	0.03	0.71	0.01	0.01	0.00	81.60	0.01	-	0.01
2008_Top handler_Diesel	0.13	0.31	6.34	0.12	0.11	0.01	687.78	0.06	-	0.12
2008_Top handler_Diesel	0.13	0.36	3.18	0.16	0.15	0.00	187.71	0.04	-	0.16
2008_Top handler_Diesel	0.07	0.23	3.23	0.06	0.06	0.01	597.26	0.02	-	0.06
2008_Yard tractor_LPG	0.01	0.09	0.06	0.00	0.00	-	3.52	0.00	-	-
2008_Yard tractor_LPG	1.29	30.20	6.86	0.08	0.08	-	927.66	0.14	-	-
2008_Yard tractor_LPG	0.89	37.73	4.67	0.12	0.12	-	1,336.63	0.05	-	-
2008_Yard tractor_LPG	0.20	2.99	1.32	0.07	0.07	-	843.43	0.03	-	-
2008_Truck_Diesel	0.01	0.05	0.24	0.01	0.01	0.00	46.79	0.00	-	0.01
2008_Truck_Diesel	0.00	0.01	0.03	0.00	0.00	0.00	12.48	0.00	-	0.00
2008_Sweeper_Diesel	0.00	0.01	0.02	0.00	0.00	0.00	1.55	0.00	-	0.00
2008_Sweeper_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	4.00	0.00	-	0.00
2008_Man Lift_Diesel	0.01	0.02	0.04	0.00	0.00	0.00	4.30	0.00	-	0.00
2008_Side pick_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	-	0.00
2008_Side pick_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	-	0.00

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2012

Table B1-7. 2012 FEIR Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Electric Wharf Crane		0			13		0%	-	0%	0%	0%
Forklift	160	2012	Diesel	0.3	3		0%	300	0%	0%	0%
Forklift	160	2012	Diesel	0.3	2		0%	226	0%	0%	0%
Forklift	160	2012	Diesel	0.3	1		0%	69	0%	0%	0%
Forklift	165	2012	Diesel	0.3	1		0%	8	0%	0%	0%
Forklift	165	2012	Diesel	0.3	2		0%	405	0%	0%	0%
Forklift	152	2012	Diesel	0.3	1		0%	113	0%	0%	0%
Forklift	152	2012	Diesel	0.3	1		0%	855	0%	0%	0%
Forklift	152	2012	Diesel	0.3	2		0%	1,005	0%	0%	0%
Forklift	153	2009	Diesel	0.3	1		0%	80	0%	0%	0%
Forklift	153	2009	Diesel	0.3	1		0%	-	0%	0%	0%
Forklift	153	2012	Diesel	0.3	1		0%	101	0%	0%	0%
Forklift	190	2012	Diesel	0.3	1		0%	447	0%	0%	0%
Forklift	137	2009	Diesel	0.3	2		0%	1,000	0%	0%	0%
Rub-trd Gantry Crane	685	0	Electric	0.2	5		0%	5,015	0%	0%	0%
Rub-trd Gantry Crane	685	0	Electric	0.2	3		0%	1,230	0%	0%	0%
Rub-trd Gantry Crane	612	0	Electric	0.2	8		0%	8,877	0%	0%	0%
Rub-trd Gantry Crane	454	0	Electric	0.2	2		0%	1,479	0%	0%	0%
Rub-trd Gantry Crane	197	0	Electric	0.2	1		0%	422	0%	0%	0%
Top handler	250	2009	Diesel	0.59	9		0%	7,016	0%	0%	0%
Top handler	260	2009	Diesel	0.59	6		0%	4,931	0%	0%	0%
Top handler	260	2009	Diesel	0.59	15		0%	18,722	0%	0%	0%
Top handler	260	2009	Diesel	0.59	6		0%	5,131	0%	0%	0%
Top handler	335	2011	Diesel	0.59	3		0%	2,109	0%	0%	0%
Yard tractor	174	2000	LPG	0.39	2		0%	344	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	37,114	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	50,429	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	40,350	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	23		0%	12,319	0%	0%	0%
Sweeper	100	2012	Diesel	0.68	1		0%	-	0%	0%	0%
Sweeper	100	2012	Diesel	0.68	1		0%	604	0%	0%	0%
Truck	250	2005	Diesel	0.51	2		0%	678	0%	0%	0%
Truck	250	2008	Diesel	0.51	2		0%	1,089	0%	0%	0%
Truck	275	1993	Diesel	0.51	1		0%	-	0%	0%	0%
Truck	275	2001	Diesel	0.51	1		0%	179	0%	0%	0%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations

Operating Hours are only for China Shipping operations calculated by applying ratic

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT termina

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-8. 2012 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2012_Electric Wharf Crane___0	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel_160_2012	0.101	2.720	2.160	0.009	0.008	0.010	852.461	0.021	-
2012_Forklift_Diesel_160_2012	0.104	2.728	2.163	0.009	0.008	0.010	852.461	0.021	-
2012_Forklift_Diesel_160_2012	0.098	2.710	2.156	0.009	0.008	0.010	852.461	0.021	-
2012_Forklift_Diesel_165_2012	0.095	2.701	2.152	0.009	0.008	0.010	852.461	0.021	-
2012_Forklift_Diesel_165_2012	0.104	2.729	2.163	0.009	0.008	0.010	852.461	0.021	-
2012_Forklift_Diesel_152_2012	0.100	2.716	2.158	0.009	0.008	0.010	852.461	0.021	-
2012_Forklift_Diesel_152_2012	0.133	2.820	2.199	0.009	0.008	0.010	852.461	0.021	-
2012_Forklift_Diesel_152_2012	0.118	2.771	2.180	0.009	0.008	0.010	852.461	0.021	-
2012_Forklift_Diesel_153_2009	0.122	2.745	2.342	0.117	0.108	0.010	852.433	0.046	-
2012_Forklift_Diesel_153_2009	0.105	2.700	2.323	0.112	0.103	0.010	852.433	0.046	-
2012_Forklift_Diesel_153_2012	0.099	2.714	2.158	0.009	0.008	0.010	852.461	0.021	-
2012_Forklift_Diesel_190_2012	0.091	0.941	1.304	0.009	0.008	0.010	852.437	0.017	-
2012_Forklift_Diesel_137_2009	0.212	2.990	2.446	0.144	0.133	0.010	852.433	0.046	-
2012_Rub-trd Gantry Crane_Electric_685_0	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric_685_0	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric_612_0	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric_454_0	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric_197_0	-	-	-	-	-	-	-	-	-
2012_Top handler_Diesel_250_2009	0.297	1.097	2.543	0.120	0.111	0.010	852.345	0.038	-
2012_Top handler_Diesel_260_2009	0.300	1.100	2.545	0.121	0.111	0.008	853.009	0.038	-
2012_Top handler_Diesel_260_2009	0.370	1.165	2.626	0.133	0.122	0.008	853.009	0.038	-
2012_Top handler_Diesel_260_2009	0.288	1.088	2.531	0.119	0.109	0.008	853.009	0.038	-
2012_Top handler_Diesel_335_2011	0.131	0.974	1.339	0.009	0.009	0.008	851.552	0.019	-
2012_Yard tractor_LPG_174_2000	1.536	20.278	10.966	0.060	0.060	-	674.859	0.244	-
2012_Yard tractor_LPG_195_2004	1.192	27.841	5.446	0.060	0.060	-	674.859	0.171	-
2012_Yard tractor_LPG_195_2007	1.204	25.324	4.252	0.060	0.060	-	674.859	0.050	-
2012_Yard tractor_LPG_195_2008	0.521	2.514	1.179	0.060	0.060	-	674.859	0.045	-
2012_Yard tractor_LPG_231_2011	0.063	8.265	0.398	0.060	0.060	-	674.859	0.027	-
2012_Sweeper_Diesel_100_2012	0.095	3.050	0.094	0.009	0.008	0.010	852.431	0.019	-
2012_Sweeper_Diesel_100_2012	0.122	3.146	0.096	0.009	0.008	0.010	852.431	0.019	-
2012_Truck_Diesel_250_2005	0.261	1.050	4.473	0.113	0.104	0.010	852.099	0.061	-
2012_Truck_Diesel_250_2008	0.264	1.066	2.504	0.115	0.106	0.010	851.926	0.043	-
2012_Truck_Diesel_275_1993	0.716	2.700	7.598	0.274	0.252	0.008	834.926	0.154	-
2012_Truck_Diesel_275_2001	0.403	1.022	6.504	0.147	0.135	0.008	849.903	0.069	-

Table B1-9. 2012 FEIR Mitigated Scenario Annual Mass Emissions

		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2012_Electric Wharf Crane_		-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	14,411	0.00	0.04	0.03	0.00	0.00	0.00	14	0.00	-	0.00
2012_Forklift_Diesel	10,845	0.00	0.03	0.03	0.00	0.00	0.00	10	0.00	-	0.00
2012_Forklift_Diesel	3,322	0.00	0.01	0.01	0.00	0.00	0.00	3	0.00	-	0.00
2012_Forklift_Diesel	378	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	-	0.00
2012_Forklift_Diesel	20,025	0.00	0.06	0.05	0.00	0.00	0.00	19	0.00	-	0.00
2012_Forklift_Diesel	5,151	0.00	0	0.01	0.00	0.00	0.00	5	0.00	-	0.00
2012_Forklift_Diesel	38,983	0.01	0.12	0.09	0.00	0.00	0.00	36.63	0.00	-	0.00
2012_Forklift_Diesel	45,828	0.01	0.14	0.11	0.00	0.00	0.00	43.06	0.00	-	0.00
2012_Forklift_Diesel	3,667	0.00	0.01	0.01	0.00	0.00	0.00	3.45	0.00	-	0.00
2012_Forklift_Diesel	-	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	4,648	0.00	0.01	0.01	0.00	0.00	0.00	4.37	0.00	-	0.00
2012_Forklift_Diesel	25,466	0.00	0.03	0.04	0.00	0.00	0.00	23.93	0.00	-	0.00
2012_Forklift_Diesel	41,117	0.01	0.14	0.11	0.01	0.01	0.00	38.63	0.00	-	0.01
2012_Rub-trd Gantry Crane_Electric	687,028	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	168,567	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	1,086,487	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	134,316	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	16,641	-	-	-	-	-	-	-	-	-	-
2012_Top handler_Diesel	1,034,806	0.34	1.25	2.90	0.14	0.13	0.01	972.23	0.04	-	0.14
2012_Top handler_Diesel	756,391	0.25	0.92	2.12	0.10	0.09	0.01	711.21	0.03	-	0.10
2012_Top handler_Diesel	2,872,020	1.17	3.69	8.31	0.42	0.39	0.03	2,700.46	0.12	-	0.42
2012_Top handler_Diesel	787,068	0.25	0.94	2.20	0.10	0.09	0.01	740.05	0.03	-	0.10
2012_Top handler_Diesel	416,786	0.06	0.45	0.62	0.00	0.00	0.00	391.22	0.01	-	0.00
2012_Yard tractor_LPG	23,343	0.04	0.52	0.28	0.00	0.00	-	17.36	0.01	-	-
2012_Yard tractor_LPG	2,822,527	3.71	86.62	16.94	0.19	0.19	-	2,099.66	0.53	-	-
2012_Yard tractor_LPG	3,835,117	5.09	107.06	17.97	0.25	0.25	-	2,852.92	0.21	-	-
2012_Yard tractor_LPG	3,068,651	1.76	8.50	3.99	0.20	0.20	-	2,282.75	0.15	-	-
2012_Yard tractor_LPG	1,109,814	0.08	10.11	0.49	0.07	0.07	-	825.58	0.03	-	-
2012_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-	-
2012_Sweeper_Diesel	41,038	0.01	0.14	0.00	0.00	0.00	0.00	38.56	0.00	-	0.00
2012_Truck_Diesel	86,484	0.02	0.10	0.43	0.01	0.01	0.00	81.23	0.01	-	0.01
2012_Truck_Diesel	138,907	0.04	0.16	0.38	0.02	0.02	0.00	130.44	0.01	-	0.02
2012_Truck_Diesel	-	-	-	-	-	-	-	-	-	-	-
2012_Truck_Diesel	25,050	0.01	0.03	0.18	0.00	0.00	0.00	23.47	0.00	-	0.00

Table B1-10. 2012 FEIR Mitigated Scenario Peak Day Emissions

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2012_Electric Wharf Crane_	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	0.0040	0.01	0.35	0.27	0.00	0.00	0.00	108	0.00	-	0.00
2012_Forklift_Diesel	0.0040	0.01	0.26	0.21	0.00	0.00	0.00	81	0.00	-	0.00
2012_Forklift_Diesel	0.0040	0.00	0.08	0.06	0.00	0.00	0.00	25	0.00	-	0.00
2012_Forklift_Diesel	0.0040	0.00	0.01	0.01	0.00	0.00	0.00	3	0.00	-	0.00
2012_Forklift_Diesel	0.0040	0.02	0.48	0.38	0.00	0.00	0.00	150	0.00	-	0.00
2012_Forklift_Diesel	0.0040	0.00	0	0.10	0.00	0.00	0.00	39	0.00	-	0.00
2012_Forklift_Diesel	0.0040	0.05	0.97	0.75	0.00	0.00	0.00	292.56	0.01	-	0.00
2012_Forklift_Diesel	0.0040	0.05	1.12	0.88	0.00	0.00	0.00	343.93	0.01	-	0.00
2012_Forklift_Diesel	0.0040	0.00	0.09	0.08	0.00	0.00	0.00	27.52	0.00	-	0.00
2012_Forklift_Diesel	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	0.0040	0.00	0.11	0.09	0.00	0.00	0.00	34.88	0.00	-	0.00
2012_Forklift_Diesel	0.0040	0.02	0.21	0.29	0.00	0.00	0.00	191.11	0.00	-	0.00
2012_Forklift_Diesel	0.0040	0.08	1.08	0.89	0.05	0.05	0.00	308.57	0.02	-	0.05
2012_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Top handler_Diesel	0.0040	2.71	10.00	23.16	1.10	1.01	0.09	7,764.95	0.34	-	1.10
2012_Top handler_Diesel	0.0040	2.00	7.32	16.95	0.80	0.74	0.06	5,680.20	0.25	-	0.80
2012_Top handler_Diesel	0.0040	9.37	29.45	66.40	3.36	3.09	0.21	21,567.78	0.95	-	3.36
2012_Top handler_Diesel	0.0040	1.99	7.54	17.54	0.82	0.76	0.06	5,910.58	0.26	-	0.82
2012_Top handler_Diesel	0.0040	0.48	3.57	4.91	0.03	0.03	0.03	3,124.56	0.07	-	0.03
2012_Yard tractor_LPG	0.0040	0.32	4.17	2.25	0.01	0.01	-	138.69	0.05	-	-
2012_Yard tractor_LPG	0.0040	29.63	691.82	135.32	1.48	1.48	-	16,769.33	4.25	-	-
2012_Yard tractor_LPG	0.0040	40.65	855.02	143.55	2.01	2.01	-	22,785.37	1.70	-	-
2012_Yard tractor_LPG	0.0040	14.08	67.91	31.85	1.61	1.61	-	18,231.61	1.20	-	-
2012_Yard tractor_LPG	0.0040	0.62	80.75	3.89	0.58	0.58	-	6,593.68	0.26	-	-
2012_Sweeper_Diesel	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Sweeper_Diesel	0.0040	0.04	1.14	0.03	0.00	0.00	0.00	307.97	0.01	-	0.00
2012_Truck_Diesel	0.0040	0.20	0.80	3.41	0.09	0.08	0.01	648.77	0.05	-	0.09
2012_Truck_Diesel	0.0040	0.32	1.30	3.06	0.14	0.13	0.01	1,041.81	0.05	-	0.14
2012_Truck_Diesel	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Truck_Diesel	0.0040	0.09	0.23	1.43	0.03	0.03	0.00	187.43	0.02	-	0.03

8hr/24hr Peaking Factor*: 0.491679278

**Note: Using same peaking factor that is applied to trucks*

Table B1-11. 2012 FEIR Mitigated Scenario Eight Hour Peak Emissions

	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2012_Electric Wharf Crane_	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	0.01	0.17	0.13	0.00	0.00	0.00	53	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.13	0.10	0.00	0.00	0.00	40	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.04	0.03	0.00	0.00	0.00	12	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	1	0.00	-	0.00
2012_Forklift_Diesel	0.01	0.24	0.19	0.00	0.00	0.00	74	0.00	-	0.00
2012_Forklift_Diesel	0.00	0	0.05	0.00	0.00	0.00	19	0.00	-	0.00
2012_Forklift_Diesel	0.02	0.48	0.37	0.00	0.00	0.00	143.84	0.00	-	0.00
2012_Forklift_Diesel	0.02	0.55	0.43	0.00	0.00	0.00	169.10	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.04	0.04	0.00	0.00	0.00	13.53	0.00	-	0.00
2012_Forklift_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	0.00	0.05	0.04	0.00	0.00	0.00	17.15	0.00	-	0.00
2012_Forklift_Diesel	0.01	0.10	0.14	0.00	0.00	0.00	93.97	0.00	-	0.00
2012_Forklift_Diesel	0.04	0.53	0.44	0.03	0.02	0.00	151.72	0.01	-	0.03
2012_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2012_Top handler_Diesel	1.33	4.92	11.39	0.54	0.50	0.04	3,817.86	0.17	-	0.54
2012_Top handler_Diesel	0.98	3.60	8.33	0.40	0.36	0.03	2,792.84	0.12	-	0.40
2012_Top handler_Diesel	4.61	14.48	32.65	1.65	1.52	0.10	10,604.43	0.47	-	1.65
2012_Top handler_Diesel	0.98	3.71	8.62	0.40	0.37	0.03	2,906.11	0.13	-	0.40
2012_Top handler_Diesel	0.24	1.76	2.42	0.02	0.02	0.02	1,536.28	0.03	-	0.02
2012_Yard tractor_LPG	0.16	2.05	1.11	0.01	0.01	-	68.19	0.02	-	-
2012_Yard tractor_LPG	14.57	340.15	66.53	0.73	0.73	-	8,245.13	2.09	-	-
2012_Yard tractor_LPG	19.99	420.40	70.58	0.99	0.99	-	11,203.10	0.84	-	-
2012_Yard tractor_LPG	6.92	33.39	15.66	0.79	0.79	-	8,964.11	0.59	-	-
2012_Yard tractor_LPG	0.30	39.70	1.91	0.29	0.29	-	3,241.98	0.13	-	-
2012_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Sweeper_Diesel	0.02	0.56	0.02	0.00	0.00	0.00	151.42	0.00	-	0.00
2012_Truck_Diesel	0.10	0.39	1.67	0.04	0.04	0.00	318.99	0.02	-	0.04
2012_Truck_Diesel	0.16	0.64	1.51	0.07	0.06	0.01	512.24	0.03	-	0.07
2012_Truck_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Truck_Diesel	0.04	0.11	0.71	0.02	0.01	0.00	92.16	0.01	-	0.02

1hr/24hr Peaking Factor*: 0.070264762

**Note: Using same peaking factor that is applied to trucks*

Table B1-12. 2012 FEIR Mitigated Scenario One Hour Peak Emissions

	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2012_Electric Wharf Crane_	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	8	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.02	0.01	0.00	0.00	0.00	6	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.01	0.00	0.00	0.00	0.00	2	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.03	0.03	0.00	0.00	0.00	11	0.00	-	0.00
2012_Forklift_Diesel	0.00	0	0.01	0.00	0.00	0.00	3	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.07	0.05	0.00	0.00	0.00	20.56	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.08	0.06	0.00	0.00	0.00	24.17	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.01	0.01	0.00	0.00	0.00	1.93	0.00	-	0.00
2012_Forklift_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	0.00	0.01	0.01	0.00	0.00	0.00	2.45	0.00	-	0.00
2012_Forklift_Diesel	0.00	0.01	0.02	0.00	0.00	0.00	13.43	0.00	-	0.00
2012_Forklift_Diesel	0.01	0.08	0.06	0.00	0.00	0.00	21.68	0.00	-	0.00
2012_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2012_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2012_Top handler_Diesel	0.19	0.70	1.63	0.08	0.07	0.01	545.60	0.02	-	0.08
2012_Top handler_Diesel	0.14	0.51	1.19	0.06	0.05	0.00	399.12	0.02	-	0.06
2012_Top handler_Diesel	0.66	2.07	4.67	0.24	0.22	0.01	1,515.45	0.07	-	0.24
2012_Top handler_Diesel	0.14	0.53	1.23	0.06	0.05	0.00	415.31	0.02	-	0.06
2012_Top handler_Diesel	0.03	0.25	0.35	0.00	0.00	0.00	219.55	0.00	-	0.00
2012_Yard tractor_LPG	0.02	0.29	0.16	0.00	0.00	-	9.74	0.00	-	-
2012_Yard tractor_LPG	2.08	48.61	9.51	0.10	0.10	-	1,178.29	0.30	-	-
2012_Yard tractor_LPG	2.86	60.08	10.09	0.14	0.14	-	1,601.01	0.12	-	-
2012_Yard tractor_LPG	0.99	4.77	2.24	0.11	0.11	-	1,281.04	0.08	-	-
2012_Yard tractor_LPG	0.04	5.67	0.27	0.04	0.04	-	463.30	0.02	-	-
2012_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Sweeper_Diesel	0.00	0.08	0.00	0.00	0.00	0.00	21.64	0.00	-	0.00
2012_Truck_Diesel	0.01	0.06	0.24	0.01	0.01	0.00	45.59	0.00	-	0.01
2012_Truck_Diesel	0.02	0.09	0.22	0.01	0.01	0.00	73.20	0.00	-	0.01
2012_Truck_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Truck_Diesel	0.01	0.02	0.10	0.00	0.00	0.00	13.17	0.00	-	0.00

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2014

Table B1-13. 2014 FEIR Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS
Electric Wharf Crane	0	0	Electric	na	16	N/A	0%	-
Forklift	137	2014	Diesel	0.3	3	N/A	0%	785
Forklift	152	2014	Diesel	0.3	1	N/A	0%	-
Forklift	152	2014	Diesel	0.3	2	N/A	0%	1,109
Forklift	152	2014	Diesel	0.3	3	N/A	0%	896
Forklift	164	2014	Diesel	0.3	1	N/A	0%	72
Forklift	165	2014	Diesel	0.3	1	N/A	0%	43
Forklift	190	2014	Diesel	0.3	2	N/A	0%	1,022
Forklift	75	2014	Diesel	0.3	1	N/A	0%	55
Forklift	160	2014	Diesel	0.3	3	N/A	0%	597
Forklift	160	2014	Diesel	0.3	2	N/A	0%	232
Forklift	165	2014	Diesel	0.3	1	N/A	0%	1
Forklift	165	2014	Diesel	0.3	2	N/A	0%	627
Rub-trd Gantry Crane	197	0	Electric	0.2	1	N/A	0%	1,636
Rub-trd Gantry Crane	454	0	Electric	0.2	2	N/A	0%	2,701
Rub-trd Gantry Crane	600	0	Electric	0.2	1	N/A	0%	1,629
Rub-trd Gantry Crane	612	0	Electric	0.2	8	N/A	0%	15,784
Rub-trd Gantry Crane	685	0	Electric	0.2	1	N/A	0%	1,306
Rub-trd Gantry Crane	685	0	Electric	0.2	5	N/A	0%	10,707
Sweeper	100	2014	Diesel	0.68	1	N/A	0%	-
Top handler	250	2014	Diesel	0.59	8	N/A	0%	11,823
Top handler	260	2014	Diesel	0.59	6	N/A	0%	9,613
Top handler	260	2014	Diesel	0.59	6	N/A	0%	8,789
Top handler	260	2014	Diesel	0.59	15	N/A	0%	32,431
Top handler	335	2011	Diesel	0.59	3	N/A	0%	4,262
Top handler	370	2014	Diesel	0.59	1	N/A	0%	971
Truck	250	2014	Diesel	0.51	2	N/A	0%	1,161
Truck	250	2014	Diesel	0.51	2	N/A	0%	1,676
Truck	275	2014	Diesel	0.51	1	N/A	0%	650
Yard tractor	174	2000	LPG	0.39	2	N/A	0%	449
Yard tractor	195	2004	LPG	0.39	53	N/A	0%	63,798
Yard tractor	195	2007	LPG	0.39	59	N/A	0%	88,949
Yard tractor	195	2008	LPG	0.39	43	N/A	0%	67,604
Yard tractor	231	2011	LPG	0.39	23	N/A	0%	17,903

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-14. 2014 FEIR Mitigated Scenario- CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2014_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-
2014_Forklift_Diesel	0.118	2.774	2.181	0.009	0.008	0.010	852.471	0.021	-
2014_Forklift_Diesel	0.111	2.750	2.172	0.009	0.008	0.010	852.471	0.021	-
2014_Forklift_Diesel	0.111	2.750	2.172	0.009	0.008	0.010	852.471	0.021	-
2014_Forklift_Diesel	0.111	2.750	2.172	0.009	0.008	0.010	852.471	0.021	-
2014_Forklift_Diesel	0.097	2.708	2.155	0.009	0.008	0.010	852.471	0.021	-
2014_Forklift_Diesel	0.105	2.733	2.165	0.009	0.008	0.010	852.471	0.021	-
2014_Forklift_Diesel	0.070	0.954	0.261	0.009	0.008	0.010	852.458	0.012	-
2014_Forklift_Diesel	0.107	3.057	2.743	0.009	0.008	0.010	852.433	0.021	-
2014_Forklift_Diesel	0.103	2.727	2.163	0.009	0.008	0.010	852.471	0.021	-
2014_Forklift_Diesel	0.103	2.727	2.163	0.009	0.008	0.010	852.471	0.021	-
2014_Forklift_Diesel	0.105	2.733	2.165	0.009	0.008	0.010	852.471	0.021	-
2014_Forklift_Diesel	0.105	2.733	2.165	0.009	0.008	0.010	852.471	0.021	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2014_Sweeper_Diesel	0.095	3.050	0.094	0.009	0.008	0.010	852.427	0.019	-
2014_Top handler_Diesel	0.080	0.973	0.263	0.009	0.008	0.010	852.572	0.011	-
2014_Top handler_Diesel	0.088	0.991	0.266	0.009	0.009	0.008	850.994	0.011	-
2014_Top handler_Diesel	0.088	0.991	0.266	0.009	0.009	0.008	850.994	0.011	-
2014_Top handler_Diesel	0.088	0.991	0.266	0.009	0.009	0.008	850.994	0.011	-
2014_Top handler_Diesel	0.236	1.073	1.430	0.011	0.010	0.008	854.065	0.027	-
2014_Top handler_Diesel	0.070	0.946	0.261	0.009	0.008	0.008	850.994	0.011	-
2014_Truck_Diesel	0.067	0.948	0.260	0.009	0.008	0.010	852.412	0.013	-
2014_Truck_Diesel	0.067	0.948	0.260	0.009	0.008	0.010	852.412	0.013	-
2014_Truck_Diesel	0.064	0.943	0.259	0.009	0.008	0.008	852.493	0.013	-
2014_Yard tractor_LPG	1.557	20.773	11.026	0.060	0.060	-	674.859	0.220	-
2014_Yard tractor_LPG	1.498	34.964	5.998	0.060	0.060	-	674.859	0.206	-
2014_Yard tractor_LPG	2.035	32.242	6.339	0.060	0.060	-	674.859	0.062	-
2014_Yard tractor_LPG	0.837	2.620	1.285	0.060	0.060	-	674.859	0.056	-
2014_Yard tractor_LPG	0.119	17.961	0.537	0.060	0.060	-	674.859	0.039	-

Note: Emission factors for diesel equiment from EPA Offroad CI Engine Tier Regulations

Propane equipment emission factors are from ARB. EFs for remaining pollutants are based on CNG forklift emission rates from Offroad2007.

Table B1-15. 2014 FEIR Mitigated Scenario Annual Mass Emissions **FEIR Mitigated Scenario**

2014		Annual Emissions (tons/year)									
General name	**(HP-Hrs)/Yr**	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2014_Electric Wharf Crane_Electric		-	-	-	-	-	-	-	-	-	-
2014_Forklift_Diesel	32,248	0.00	0.10	0.08	0.00	0.00	0.00	30.30	0.00	-	0.00
2014_Forklift_Diesel	-	-	-	-	-	-	-	-	-	-	-
2014_Forklift_Diesel	50,578	0.01	0.15	0.12	0.00	0.00	0.00	47.53	0.00	-	0.00
2014_Forklift_Diesel	40,845	0.00	0.12	0.10	0.00	0.00	0.00	38.38	0.00	-	0.00
2014_Forklift_Diesel	3,567	0.00	0.01	0.01	0.00	0.00	0.00	3.35	0.00	-	0.00
2014_Forklift_Diesel	2,147	0.00	0.01	0.01	0.00	0.00	0.00	2.02	0.00	-	0.00
2014_Forklift_Diesel	58,279	0.00	0.06	0.02	0.00	0.00	0.00	54.76	0.00	-	0.00
2014_Forklift_Diesel	1,235	0.00	0.00	0.00	0.00	0.00	0.00	1.16	0.00	-	0.00
2014_Forklift_Diesel	28,653	0.00	0.09	0.07	0.00	0.00	0.00	26.92	0.00	-	0.00
2014_Forklift_Diesel	11,155	0.00	0.03	0.03	0.00	0.00	0.00	10.48	0.00	-	0.00
2014_Forklift_Diesel	34	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	-	0.00
2014_Forklift_Diesel	31,024	0.00	0.09	0.07	0.00	0.00	0.00	29.15	0.00	-	0.00
2014_Rub-trd Gantry Crane_Electric	64,444	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	245,228	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	195,462	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	1,932,013	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	178,968	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	1,466,830	-	-	-	-	-	-	-	-	-	-
2014_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-	-
2014_Top handler_Diesel	1,743,853	0.15	1.87	0.51	0.02	0.02	0.02	1,638.84	0.02	-	0.02
2014_Top handler_Diesel	1,474,562	0.14	1.61	0.43	0.02	0.01	0.01	1,383.21	0.02	-	0.02
2014_Top handler_Diesel	1,348,174	0.13	1.47	0.39	0.01	0.01	0.01	1,264.65	0.02	-	0.01
2014_Top handler_Diesel	4,974,868	0.49	5.43	1.46	0.05	0.05	0.05	4,666.65	0.06	-	0.05
2014_Top handler_Diesel	842,354	0.22	1.00	1.33	0.01	0.01	0.01	793.02	0.03	-	0.01
2014_Top handler_Diesel	211,957	0.02	0.22	0.06	0.00	0.00	0.00	198.82	0.00	-	0.00
2014_Truck_Diesel	148,070	0.01	0.15	0.04	0.00	0.00	0.00	139.13	0.00	-	0.00
2014_Truck_Diesel	213,726	0.02	0.22	0.06	0.00	0.00	0.00	200.82	0.00	-	0.00
2014_Truck_Diesel	91,227	0.01	0.09	0.03	0.00	0.00	0.00	85.73	0.00	-	0.00
2014_Yard tractor_LPG	30,438	0.05	0.70	0.37	0.00	0.00	-	22.64	0.01	-	-
2014_Yard tractor_LPG	4,851,860	8.01	186.99	32.08	0.32	0.32	-	3,609.26	1.10	-	-
2014_Yard tractor_LPG	6,764,593	15.17	240.41	47.27	0.44	0.44	-	5,032.13	0.46	-	-
2014_Yard tractor_LPG	5,141,295	4.75	14.85	7.28	0.34	0.34	-	3,824.57	0.32	-	-
2014_Yard tractor_LPG	1,612,894	0.21	31.93	0.95	0.11	0.11	-	1,199.82	0.07	-	-

Table B1-16. 2014 FEIR Mitigated Scenario Peak Day Emissions **FEIR Mitigated Scenario**

2014

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2014_Electric Wharf Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Forklift_Diesel	0.0042	0.04	0.82	0.64	0.00	0.00	0.00	251.99	0.01	-	0.00
2014_Forklift_Diesel	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Forklift_Diesel	0.0042	0.05	1.27	1.01	0.00	0.00	0.00	395.23	0.01	-	0.00
2014_Forklift_Diesel	0.0042	0.04	1.03	0.81	0.00	0.00	0.00	319.18	0.01	-	0.00
2014_Forklift_Diesel	0.0042	0.00	0.09	0.07	0.00	0.00	0.00	27.87	0.00	-	0.00
2014_Forklift_Diesel	0.0042	0.00	0.05	0.04	0.00	0.00	0.00	16.77	0.00	-	0.00
2014_Forklift_Diesel	0.0042	0.04	0.51	0.14	0.00	0.00	0.01	455.40	0.01	-	0.00
2014_Forklift_Diesel	0.0042	0.00	0.03	0.03	0.00	0.00	0.00	9.65	0.00	-	0.00
2014_Forklift_Diesel	0.0042	0.03	0.72	0.57	0.00	0.00	0.00	223.90	0.01	-	0.00
2014_Forklift_Diesel	0.0042	0.01	0.28	0.22	0.00	0.00	0.00	87.17	0.00	-	0.00
2014_Forklift_Diesel	0.0042	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	-	0.00
2014_Forklift_Diesel	0.0042	0.03	0.78	0.62	0.00	0.00	0.00	242.43	0.01	-	0.00
2014_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Sweeper_Diesel	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Top handler_Diesel	0.0042	1.27	15.56	4.21	0.15	0.14	0.15	13,628.61	0.17	-	0.15
2014_Top handler_Diesel	0.0042	1.20	13.39	3.59	0.13	0.12	0.11	11,502.72	0.14	-	0.13
2014_Top handler_Diesel	0.0042	1.09	12.24	3.28	0.12	0.11	0.10	10,516.79	0.13	-	0.12
2014_Top handler_Diesel	0.0042	4.03	45.18	12.12	0.43	0.40	0.38	38,807.78	0.48	-	0.43
2014_Top handler_Diesel	0.0042	1.82	8.28	11.04	0.09	0.08	0.06	6,594.72	0.21	-	0.09
2014_Top handler_Diesel	0.0042	0.14	1.84	0.51	0.02	0.02	0.02	1,653.42	0.02	-	0.02
2014_Truck_Diesel	0.0042	0.09	1.29	0.35	0.01	0.01	0.01	1,156.99	0.02	-	0.01
2014_Truck_Diesel	0.0042	0.13	1.86	0.51	0.02	0.02	0.02	1,670.00	0.03	-	0.02
2014_Truck_Diesel	0.0042	0.05	0.79	0.22	0.01	0.01	0.01	712.89	0.01	-	0.01
2014_Yard tractor_LPG	0.0042	0.43	5.80	3.08	0.02	0.02	-	188.30	0.06	-	-
2014_Yard tractor_LPG	0.0042	66.62	1,555.04	266.78	2.65	2.65	-	30,014.59	9.15	-	-
2014_Yard tractor_LPG	0.0042	126.16	1,999.25	393.06	3.70	3.70	-	41,847.14	3.86	-	-
2014_Yard tractor_LPG	0.0042	39.47	123.46	60.55	2.81	2.81	-	31,805.09	2.66	-	-
2014_Yard tractor_LPG	0.0042	1.75	265.55	7.93	0.88	0.88	-	9,977.69	0.57	-	-

8hr/24hr Peaking Factor*: 0.489622946

**Note: Using same peaking factor that is applied to trucks*

Table B1-17. 2014 FEIR Mitigated Scenario Eight Hour Peak Emissions **FEIR Mitigated Scenario**

2014	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2014_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Forklift_Diesel	0.02	0.40	0.32	0.00	0.00	0.00	123.38	0.00	-	0.00
2014_Forklift_Diesel	-	-	-	-	-	-	-	-	-	-
2014_Forklift_Diesel	0.03	0.62	0.49	0.00	0.00	0.00	193.51	0.00	-	0.00
2014_Forklift_Diesel	0.02	0.50	0.40	0.00	0.00	0.00	156.28	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.04	0.03	0.00	0.00	0.00	13.65	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.03	0.02	0.00	0.00	0.00	8.21	0.00	-	0.00
2014_Forklift_Diesel	0.02	0.25	0.07	0.00	0.00	0.00	222.98	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	4.72	0.00	-	0.00
2014_Forklift_Diesel	0.01	0.35	0.28	0.00	0.00	0.00	109.63	0.00	-	0.00
2014_Forklift_Diesel	0.01	0.14	0.11	0.00	0.00	0.00	42.68	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	-	0.00
2014_Forklift_Diesel	0.01	0.38	0.30	0.00	0.00	0.00	118.70	0.00	-	0.00
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-
2014_Top handler_Diesel	0.62	7.62	2.06	0.07	0.07	0.08	6,672.88	0.08	-	0.07
2014_Top handler_Diesel	0.59	6.56	1.76	0.06	0.06	0.06	5,631.99	0.07	-	0.06
2014_Top handler_Diesel	0.54	5.99	1.61	0.06	0.05	0.05	5,149.26	0.06	-	0.06
2014_Top handler_Diesel	1.98	22.12	5.93	0.21	0.19	0.19	19,001.18	0.24	-	0.21
2014_Top handler_Diesel	0.89	4.06	5.41	0.04	0.04	0.03	3,228.93	0.10	-	0.04
2014_Top handler_Diesel	0.07	0.90	0.25	0.01	0.01	0.01	809.55	0.01	-	0.01
2014_Truck_Diesel	0.04	0.63	0.17	0.01	0.01	0.01	566.49	0.01	-	0.01
2014_Truck_Diesel	0.06	0.91	0.25	0.01	0.01	0.01	817.67	0.01	-	0.01
2014_Truck_Diesel	0.03	0.39	0.11	0.00	0.00	0.00	349.05	0.01	-	0.00
2014_Yard tractor_LPG	0.21	2.84	1.51	0.01	0.01	-	92.19	0.03	-	-
2014_Yard tractor_LPG	32.62	761.38	130.62	1.30	1.30	-	14,695.83	4.48	-	-
2014_Yard tractor_LPG	61.77	978.88	192.45	1.81	1.81	-	20,489.32	1.89	-	-
2014_Yard tractor_LPG	19.32	60.45	29.65	1.38	1.38	-	15,572.50	1.30	-	-
2014_Yard tractor_LPG	0.86	130.02	3.88	0.43	0.43	-	4,885.31	0.28	-	-

1hr/24hr Peaking Factor*: 0.070410261

**Note: Using same peaking factor that is applied to trucks*

Table B1-18. 2014 FEIR Mitigated Scenario One Hour Peak Emissions **FEIR Mitigated Scenario**

2014	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2014	-	-	-	-	-	-	-	-	-	-
General name	0.00	0.06	0.05	0.00	0.00	0.00	17.74	0.00	-	0.00
2014_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Forklift_Diesel	0.00	0.09	0.07	0.00	0.00	0.00	27.83	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.07	0.06	0.00	0.00	0.00	22.47	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.01	0.00	0.00	0.00	0.00	1.96	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	1.18	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.04	0.01	0.00	0.00	0.00	32.06	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.05	0.04	0.00	0.00	0.00	15.76	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	6.14	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	-	0.00
2014_Forklift_Diesel	0.00	0.05	0.04	0.00	0.00	0.00	17.07	0.00	-	0.00
2014_Forklift_Diesel	-	-	-	-	-	-	-	-	-	-
2014_Forklift_Diesel	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_Electric	0.09	1.10	0.30	0.01	0.01	0.01	959.59	0.01	-	0.01
2014_Sweeper_Diesel	0.08	0.94	0.25	0.01	0.01	0.01	809.91	0.01	-	0.01
2014_Top handler_Diesel	0.08	0.86	0.23	0.01	0.01	0.01	740.49	0.01	-	0.01
2014_Top handler_Diesel	0.28	3.18	0.85	0.03	0.03	0.03	2,732.47	0.03	-	0.03
2014_Top handler_Diesel	0.13	0.58	0.78	0.01	0.01	0.00	464.34	0.01	-	0.01
2014_Top handler_Diesel	0.01	0.13	0.04	0.00	0.00	0.00	116.42	0.00	-	0.00
2014_Top handler_Diesel	0.01	0.09	0.02	0.00	0.00	0.00	81.46	0.00	-	0.00
2014_Top handler_Diesel	0.01	0.13	0.04	0.00	0.00	0.00	117.59	0.00	-	0.00
2014_Truck_Diesel	0.00	0.06	0.02	0.00	0.00	0.00	50.19	0.00	-	0.00
2014_Truck_Diesel	0.03	0.41	0.22	0.00	0.00	-	13.26	0.00	-	-
2014_Truck_Diesel	4.69	109.49	18.78	0.19	0.19	-	2,113.34	0.64	-	-
2014_Yard tractor_LPG	8.88	140.77	27.68	0.26	0.26	-	2,946.47	0.27	-	-
2014_Yard tractor_LPG	2.78	8.69	4.26	0.20	0.20	-	2,239.40	0.19	-	-
2014_Yard tractor_LPG	0.12	18.70	0.56	0.06	0.06	-	702.53	0.04	-	-

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2018

Table B1-19. 2018 FEIR Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2014	Diesel	0.3	1		0%	279	0%	0%	0%
Forklift	152	2014	Diesel	0.3	1		0%	808	0%	0%	0%
Forklift	152	2014	Diesel	0.3	2		0%	1,888	0%	0%	0%
Forklift	190	2014	Diesel	0.3	1		0%	880	0%	0%	0%
Forklift	160	2014	Diesel	0.3	2		0%	747	0%	0%	0%
Forklift	160	2014	Diesel	0.3	2		0%	187	0%	0%	0%
Forklift	165	2014	Diesel	0.3	2		0%	355	0%	0%	0%
Forklift	165	2014	Diesel	0.3	1		0%	309	0%	0%	0%
Rub-trd Gantry Crane	197	0	Electric	0.20	1		0%	969	0%	0%	0%
Rub-trd Gantry Crane	302	0	Electric	0.20	5		0%	8,494	0%	0%	0%
Rub-trd Gantry Crane	454	0	Electric	0.20	2		0%	3,791	0%	0%	0%
Rub-trd Gantry Crane	612	0	Electric	0.20	8		0%	8,506	0%	0%	0%
Rub-trd Gantry Crane	685	0	Electric	0.20	5		0%	7,575	0%	0%	0%
Top handler	250	2014	Diesel	0.59	8		0%	8,058	0%	0%	0%
Top handler	260	2014	Diesel	0.59	5		0%	5,435	0%	0%	0%
Top handler	260	2014	Diesel	0.59	6		0%	6,045	0%	0%	0%
Top handler	260	2014	Diesel	0.59	15		0%	30,362	0%	0%	0%
Top handler	335	2011	Diesel	0.59	3		0%	3,830	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1		0%	1,092	0%	0%	0%
Yard tractor	195	2014	LNG	0.39	53		0%	43,664	0%	0%	0%
Yard tractor	195	2014	LNG	0.39	59		0%	72,374	0%	0%	0%
Yard tractor	195	2014	LNG	0.39	43		0%	55,530	0%	0%	0%
Yard tractor	231	2014	LNG	0.39	23		0%	22,528	0%	0%	0%
Sweeper	100	2014	Diesel	0.68	1		0%	845	0%	0%	0%
Truck	250	2005	Diesel	0.51	2	DPF	0%	1,222	85%	0%	0%
Truck	250	2008	Diesel	0.51	2		0%	1,764	0%	0%	0%
Truck	275	2001	Diesel	0.51	1	DPF	0%	684	85%	0%	0%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-20. 2018 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2018_Forklift_Diesel_137_2014	0.139	2.840	2.207	0.009	0.009	0.010	852.448	0.046	-
2018_Forklift_Diesel_152_2014	0.224	3.104	2.311	0.011	0.010	0.010	852.448	0.046	-
2018_Forklift_Diesel_152_2014	0.247	3.175	2.339	0.011	0.010	0.010	852.448	0.046	-
2018_Forklift_Diesel_190_2014	0.129	1.070	0.277	0.010	0.010	0.010	852.441	0.025	-
2018_Forklift_Diesel_160_2014	0.155	2.890	2.226	0.010	0.009	0.010	852.448	0.046	-
2018_Forklift_Diesel_160_2014	0.116	2.766	2.178	0.009	0.008	0.010	852.448	0.046	-
2018_Forklift_Diesel_165_2014	0.152	2.878	2.222	0.010	0.009	0.010	852.448	0.046	-
2018_Forklift_Diesel_165_2014	0.144	2.855	2.213	0.009	0.009	0.010	852.448	0.046	-
2018_Rub-trd Gantry Crane_Electric_197_0	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric_302_0	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric_454_0	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric_612_0	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric_685_0	-	-	-	-	-	-	-	-	-
2018_Top handler_Diesel_250_2014	0.162	1.135	0.286	0.011	0.010	0.010	852.688	0.021	-
2018_Top handler_Diesel_260_2014	0.154	1.119	0.284	0.011	0.010	0.008	851.451	0.021	-
2018_Top handler_Diesel_260_2014	0.165	1.141	0.287	0.011	0.010	0.008	851.451	0.021	-
2018_Top handler_Diesel_260_2014	0.230	1.270	0.305	0.013	0.012	0.008	851.451	0.021	-
2018_Top handler_Diesel_335_2011	0.365	1.195	1.543	0.013	0.012	0.008	851.590	0.043	-
2018_Top handler_Diesel_370_2014	0.147	1.059	0.282	0.011	0.010	0.008	851.451	0.021	-
2018_Yard tractor_LNG_195_2014	0.138	1.088	0.279	0.011	0.010	0.010	852.493	0.031	-
2018_Yard tractor_LNG_195_2014	0.163	1.138	0.286	0.011	0.010	0.010	852.493	0.031	-
2018_Yard tractor_LNG_195_2014	0.174	1.158	0.289	0.012	0.011	0.010	852.493	0.031	-
2018_Yard tractor_LNG_231_2014	0.149	1.110	0.282	0.011	0.010	0.010	852.493	0.031	-
2018_Sweeper_Diesel_100_2014	0.230	3.530	0.102	0.011	0.010	0.010	852.468	0.038	-
2018_Truck_Diesel_250_2005	0.430	1.212	4.872	0.144	0.132	0.010	852.317	0.066	-
2018_Truck_Diesel_250_2008	0.464	1.251	2.733	0.148	0.137	0.010	852.132	0.065	-
2018_Truck_Diesel_275_2001	0.606	1.340	8.300	0.230	0.212	0.008	856.861	0.069	-

Table B1-21. 2018 FEIR Mitigated Scenario Annual Mass Emissions

		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2018_Forklift_Diesel	11,456	0.00	0.04	0.03	0.00	0.00	0.00	11	0.00	-	0.00
2018_Forklift_Diesel	36,831	0.01	0.13	0.09	0.00	0.00	0.00	35	0.00	-	0.00
2018_Forklift_Diesel	86,112	0.02	0.30	0.22	0.00	0.00	0.00	81	0.00	-	0.00
2018_Forklift_Diesel	50,183	0.01	0.06	0.02	0.00	0.00	0.00	47	0.00	-	0.00
2018_Forklift_Diesel	35,861	0.01	0.11	0.09	0.00	0.00	0.00	34	0.00	-	0.00
2018_Forklift_Diesel	8,965	0.00	0.03	0.02	0.00	0.00	0.00	8	0.00	-	0.00
2018_Forklift_Diesel	17,573	0.00	0	0.04	0.00	0.00	0.00	17	0.00	-	0.00
2018_Forklift_Diesel	15,315	0.00	0.05	0.04	0.00	0.00	0.00	14.39	0.00	-	0.00
2018_Rub-trd Gantry Crane_Electric	38,171	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	513,035	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	344,231	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	1,041,144	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	1,037,783	-	-	-	-	-	-	-	-	-	-
2018_Top handler_Diesel	1,188,613	0.21	1.49	0.37	0.01	0.01	0.01	1,117.19	0.03	-	0.01
2018_Top handler_Diesel	833,728	0.14	1.03	0.26	0.01	0.01	0.01	782.49	0.02	-	0.01
2018_Top handler_Diesel	927,227	0.17	1.17	0.29	0.01	0.01	0.01	870.25	0.02	-	0.01
2018_Top handler_Diesel	4,657,569	1.18	6.52	1.56	0.07	0.06	0.04	4,371.36	0.11	-	0.07
2018_Top handler_Diesel	756,918	0.30	1.00	1.29	0.01	0.01	0.01	710.52	0.04	-	0.01
2018_Top handler_Diesel	238,412	0.04	0.28	0.07	0.00	0.00	0.00	223.76	0.01	-	0.00
2018_Yard tractor_LNG	3,320,637	0.51	3.98	1.02	0.04	0.04	0.04	3,120.39	0.11	-	-
2018_Yard tractor_LNG	5,504,072	0.99	6.91	1.74	0.07	0.06	0.06	5,172.16	0.19	-	-
2018_Yard tractor_LNG	4,223,038	0.81	5.39	1.35	0.05	0.05	0.04	3,968.37	0.14	-	-
2018_Yard tractor_LNG	2,029,585	0.33	2.48	0.63	0.02	0.02	0.02	1,907.19	0.07	-	-
2018_Sweeper_Diesel	57,492	0.01	0.22	0.01	0.00	0.00	0.00	54.02	0.00	-	0.00
2018_Truck_Diesel	155,789	0.07	0.21	0.84	0.02	0.02	0.00	146.36	0.01	-	0.02
2018_Truck_Diesel	224,867	0.11	0.31	0.68	0.04	0.03	0.00	211.22	0.02	-	0.04
2018_Truck_Diesel	95,982	0.06	0.14	0.88	0.02	0.02	0.00	90.66	0.01	-	0.02

Table B1-22. 2018 FEIR Mitigated Scenario Peak Day Emissions

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2018_Forklift_Diesel	0.0042	0.01	0.30	0.24	0.00	0.00	0.00	91	0.00	-	0.00
2018_Forklift_Diesel	0.0042	0.08	1.07	0.79	0.00	0.00	0.00	293	0.02	-	0.00
2018_Forklift_Diesel	0.0042	0.20	2.55	1.88	0.01	0.01	0.01	684	0.04	-	0.01
2018_Forklift_Diesel	0.0042	0.06	0.50	0.13	0.00	0.00	0.00	399	0.01	-	0.00
2018_Forklift_Diesel	0.0042	0.05	0.97	0.74	0.00	0.00	0.00	285	0.02	-	0.00
2018_Forklift_Diesel	0.0042	0.01	0.23	0.18	0.00	0.00	0.00	71	0.00	-	0.00
2018_Forklift_Diesel	0.0042	0.02	0	0.36	0.00	0.00	0.00	140	0.01	-	0.00
2018_Forklift_Diesel	0.0042	0.02	0.41	0.32	0.00	0.00	0.00	121.65	0.01	-	0.00
2018_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2018_Top handler_Diesel	0.0042	1.79	12.57	3.17	0.13	0.12	0.11	9,444.06	0.23	-	0.13
2018_Top handler_Diesel	0.0042	1.19	8.70	2.20	0.09	0.08	0.06	6,614.74	0.16	-	0.09
2018_Top handler_Diesel	0.0042	1.42	9.86	2.48	0.10	0.09	0.07	7,356.55	0.18	-	0.10
2018_Top handler_Diesel	0.0042	9.99	55.13	13.22	0.57	0.52	0.36	36,952.82	0.90	-	0.57
2018_Top handler_Diesel	0.0042	2.57	8.43	10.88	0.09	0.09	0.06	6,006.31	0.30	-	0.09
2018_Top handler_Diesel	0.0042	0.33	2.35	0.63	0.02	0.02	0.02	1,891.55	0.05	-	0.02
2018_Yard tractor_LNG	0.0042	4.27	33.68	8.64	0.33	0.30	0.30	26,377.92	0.96	-	-
2018_Yard tractor_LNG	0.0042	8.37	58.38	14.68	0.58	0.54	0.49	43,722.31	1.59	-	-
2018_Yard tractor_LNG	0.0042	6.83	45.58	11.38	0.46	0.42	0.38	33,546.25	1.22	-	-
2018_Yard tractor_LNG	0.0042	2.82	20.99	5.34	0.21	0.19	0.18	16,122.28	0.59	-	-
2018_Sweeper_Diesel	0.0042	0.12	1.89	0.05	0.01	0.01	0.01	456.68	0.02	-	0.01
2018_Truck_Diesel	0.0042	0.62	1.76	7.07	0.21	0.19	0.01	1,237.28	0.10	-	0.21
2018_Truck_Diesel	0.0042	0.97	2.62	5.73	0.31	0.29	0.02	1,785.51	0.14	-	0.31
2018_Truck_Diesel	0.0042	0.54	1.20	7.42	0.21	0.19	0.01	766.35	0.06	-	0.21

8hr/24hr Peaking Factor*: 0.493093632

**Note: Using same peaking factor that is applied to trucks*

Table B1-23. 2018 FEIR Mitigated Scenario Eight Hour Peak Emissions

	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2018_Forklift_Diesel	0.01	0.15	0.12	0.00	0.00	0.00	45	0.00	-	0.00
2018_Forklift_Diesel	0.04	0.53	0.39	0.00	0.00	0.00	144	0.01	-	0.00
2018_Forklift_Diesel	0.10	1.26	0.93	0.00	0.00	0.00	337	0.02	-	0.00
2018_Forklift_Diesel	0.03	0.25	0.06	0.00	0.00	0.00	197	0.01	-	0.00
2018_Forklift_Diesel	0.03	0.48	0.37	0.00	0.00	0.00	140	0.01	-	0.00
2018_Forklift_Diesel	0.00	0.11	0.09	0.00	0.00	0.00	35	0.00	-	0.00
2018_Forklift_Diesel	0.01	0	0.18	0.00	0.00	0.00	69	0.00	-	0.00
2018_Forklift_Diesel	0.01	0.20	0.16	0.00	0.00	0.00	59.98	0.00	-	0.00
2018_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2018_Top handler_Diesel	0.88	6.20	1.56	0.06	0.06	0.05	4,656.81	0.11	-	0.06
2018_Top handler_Diesel	0.59	4.29	1.09	0.04	0.04	0.03	3,261.69	0.08	-	0.04
2018_Top handler_Diesel	0.70	4.86	1.22	0.05	0.04	0.04	3,627.47	0.09	-	0.05
2018_Top handler_Diesel	4.93	27.19	6.52	0.28	0.26	0.18	18,221.20	0.44	-	0.28
2018_Top handler_Diesel	1.27	4.16	5.37	0.05	0.04	0.03	2,961.68	0.15	-	0.05
2018_Top handler_Diesel	0.16	1.16	0.31	0.01	0.01	0.01	932.71	0.02	-	0.01
2018_Yard tractor_LNG	2.11	16.61	4.26	0.16	0.15	0.15	13,006.78	0.47	-	-
2018_Yard tractor_LNG	4.13	28.78	7.24	0.29	0.26	0.24	21,559.19	0.78	-	-
2018_Yard tractor_LNG	3.37	22.48	5.61	0.23	0.21	0.19	16,541.44	0.60	-	-
2018_Yard tractor_LNG	1.39	10.35	2.63	0.10	0.09	0.09	7,949.79	0.29	-	-
2018_Sweeper_Diesel	0.06	0.93	0.03	0.00	0.00	0.00	225.19	0.01	-	0.00
2018_Truck_Diesel	0.31	0.87	3.49	0.10	0.09	0.01	610.09	0.05	-	0.10
2018_Truck_Diesel	0.48	1.29	2.82	0.15	0.14	0.01	880.42	0.07	-	0.15
2018_Truck_Diesel	0.27	0.59	3.66	0.10	0.09	0.00	377.88	0.03	-	0.10

1hr/24hr Peaking Factor*: 0.070869965

**Note: Using same peaking factor that is applied to trucks*

Table B1-24. 2018 FEIR Mitigated Scenario One Hour Peak Emissions

	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2018_Forklift_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	6	0.00	-	0.00
2018_Forklift_Diesel	0.01	0.08	0.06	0.00	0.00	0.00	21	0.00	-	0.00
2018_Forklift_Diesel	0.01	0.18	0.13	0.00	0.00	0.00	48	0.00	-	0.00
2018_Forklift_Diesel	0.00	0.04	0.01	0.00	0.00	0.00	28	0.00	-	0.00
2018_Forklift_Diesel	0.00	0.07	0.05	0.00	0.00	0.00	20	0.00	-	0.00
2018_Forklift_Diesel	0.00	0.02	0.01	0.00	0.00	0.00	5	0.00	-	0.00
2018_Forklift_Diesel	0.00	0	0.03	0.00	0.00	0.00	10	0.00	-	0.00
2018_Forklift_Diesel	0.00	0.03	0.02	0.00	0.00	0.00	8.62	0.00	-	0.00
2018_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2018_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-
2018_Top handler_Diesel	0.13	0.89	0.22	0.01	0.01	0.01	669.30	0.02	-	0.01
2018_Top handler_Diesel	0.08	0.62	0.16	0.01	0.01	0.00	468.79	0.01	-	0.01
2018_Top handler_Diesel	0.10	0.70	0.18	0.01	0.01	0.01	521.36	0.01	-	0.01
2018_Top handler_Diesel	0.71	3.91	0.94	0.04	0.04	0.03	2,618.85	0.06	-	0.04
2018_Top handler_Diesel	0.18	0.60	0.77	0.01	0.01	0.00	425.67	0.02	-	0.01
2018_Top handler_Diesel	0.02	0.17	0.04	0.00	0.00	0.00	134.05	0.00	-	0.00
2018_Yard tractor_LNG	0.30	2.39	0.61	0.02	0.02	0.02	1,869.40	0.07	-	-
2018_Yard tractor_LNG	0.59	4.14	1.04	0.04	0.04	0.03	3,098.60	0.11	-	-
2018_Yard tractor_LNG	0.48	3.23	0.81	0.03	0.03	0.03	2,377.42	0.09	-	-
2018_Yard tractor_LNG	0.20	1.49	0.38	0.01	0.01	0.01	1,142.59	0.04	-	-
2018_Sweeper_Diesel	0.01	0.13	0.00	0.00	0.00	0.00	32.37	0.00	-	0.00
2018_Truck_Diesel	0.04	0.12	0.50	0.01	0.01	0.00	87.69	0.01	-	0.01
2018_Truck_Diesel	0.07	0.19	0.41	0.02	0.02	0.00	126.54	0.01	-	0.02
2018_Truck_Diesel	0.04	0.08	0.53	0.01	0.01	0.00	54.31	0.00	-	0.01

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2023

Table B1-25. 2023 FEIR Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS
Electric Wharf Crane	0	0	Electric	#N/A	0	N/A	0%	-
Forklift	75	2014	Diesel	0.3	1	N/A	0%	369
Forklift	137	2014	Diesel	0.3	1	N/A	0%	822
Forklift	152	2014	Diesel	0.3	2	N/A	0%	3,920
Forklift	152	2014	Diesel	0.3	2	N/A	0%	1,625
Forklift	160	2014	Diesel	0.3	2	N/A	0%	1,428
Forklift	160	2014	Diesel	0.3	2	N/A	0%	373
Forklift	165	2014	Diesel	0.3	2	N/A	0%	500
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	197	0	Electric	0.2	5	N/A	0%	14,366
Sweeper	100	2014	Diesel	0.68	0	N/A	0%	-
Top handler	250	2014	Diesel	0.59	8	N/A	0%	14,343
Top handler	260	2014	Diesel	0.59	3	N/A	0%	5,658
Top handler	260	2014	Diesel	0.59	8	N/A	0%	13,213
Top handler	260	2014	Diesel	0.59	15	N/A	0%	46,244
Top handler	335	2011	Diesel	0.59	3	N/A	0%	8,668
Top handler	370	2014	Diesel	0.59	1	N/A	0%	2,947
Truck	250	2014	Diesel	0.51	2	N/A	0%	1,623
Truck	250	2014	Diesel	0.51	2	N/A	0%	2,342
Truck	275	2014	Diesel	0.51	1	N/A	0%	909
Yard tractor	195	2014	LNG	0.39	53	N/A	0%	92,388
Yard tractor	195	2014	LNG	0.39	59	N/A	0%	125,838
Yard tractor	195	2014	LNG	0.39	43	N/A	0%	107,679
Yard tractor	231	2014	LNG	0.39	23	N/A	0%	35,295

Table B1-26. 2023 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2023_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-
2023_Forklift_Diesel	0.183	3.290	2.847	0.011	0.010	0.010	852.445	0.060	-
2023_Forklift_Diesel	0.266	3.236	2.363	0.012	0.011	0.010	852.469	0.057	-
2023_Forklift_Diesel	0.463	3.852	2.605	0.015	0.014	0.010	852.469	0.057	-
2023_Forklift_Diesel	0.252	3.191	2.345	0.011	0.010	0.010	852.469	0.057	-
2023_Forklift_Diesel	0.231	3.127	2.320	0.011	0.010	0.010	852.469	0.057	-
2023_Forklift_Diesel	0.132	2.817	2.198	0.009	0.008	0.010	852.469	0.057	-
2023_Forklift_Diesel	0.150	2.873	2.220	0.009	0.009	0.010	852.469	0.057	-
2023_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2023_Sweeper_Diesel	0.095	3.050	0.094	0.009	0.008	0.010	852.445	0.060	-
2023_Top handler_Diesel	0.252	1.313	0.311	0.014	0.013	0.010	851.993	0.031	-
2023_Top handler_Diesel	0.266	1.341	0.314	0.014	0.013	0.008	854.334	0.031	-
2023_Top handler_Diesel	0.241	1.291	0.307	0.013	0.012	0.008	854.334	0.031	-
2023_Top handler_Diesel	0.389	1.583	0.348	0.017	0.016	0.008	854.334	0.031	-
2023_Top handler_Diesel	0.670	1.484	1.809	0.018	0.017	0.008	853.916	0.047	-
2023_Top handler_Diesel	0.354	1.365	0.338	0.016	0.015	0.008	854.334	0.031	-
2023_Truck_Diesel	0.158	1.128	0.285	0.011	0.010	0.010	852.533	0.031	-
2023_Truck_Diesel	0.222	1.253	0.302	0.013	0.012	0.010	852.533	0.031	-
2023_Truck_Diesel	0.171	1.153	0.288	0.012	0.011	0.008	852.426	0.031	-
2023_Yard tractor_LNG	0.243	1.295	0.308	0.013	0.012	-	674.859	0.062	-
2023_Yard tractor_LNG	0.285	1.379	0.320	0.014	0.013	-	674.859	0.045	-
2023_Yard tractor_LNG	0.322	1.452	0.330	0.015	0.014	-	674.859	0.039	-
2023_Yard tractor_LNG	0.215	1.240	0.300	0.013	0.012	-	674.859	0.092	-

Table B1-27. 2023 FEIR Mitigated Scenario Annual Mass Emissions

2023		Annual Emissions (tons/year)									
General name	**(HP-Hrs)/Yr**	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2023_Electric Wharf Crane_Electric		-	-	-	-	-	-	-	-	-	-
2023_Forklift_Diesel	8,308	0.00	0.03	0.03	0.00	0.00	0.00	7.81	0.00	-	0.00
2023_Forklift_Diesel	33,768	0.01	0.12	0.09	0.00	0.00	0.00	31.73	0.00	-	0.00
2023_Forklift_Diesel	178,774	0.09	0.76	0.51	0.00	0.00	0.00	167.99	0.01	-	0.00
2023_Forklift_Diesel	74,118	0.02	0.26	0.19	0.00	0.00	0.00	69.65	0.00	-	0.00
2023_Forklift_Diesel	68,543	0.02	0.24	0.18	0.00	0.00	0.00	64.41	0.00	-	0.00
2023_Forklift_Diesel	17,917	0.00	0.06	0.04	0.00	0.00	0.00	16.84	0.00	-	0.00
2023_Forklift_Diesel	24,739	0.00	0.08	0.06	0.00	0.00	0.00	23.25	0.00	-	0.00
2023_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	566,022	-	-	-	-	-	-	-	-	-	-
2023_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-	-
2023_Top handler_Diesel	2,115,523	0.59	3.06	0.72	0.03	0.03	0.02	1,986.78	0.07	-	0.03
2023_Top handler_Diesel	867,978	0.25	1.28	0.30	0.01	0.01	0.01	817.40	0.03	-	0.01
2023_Top handler_Diesel	2,026,837	0.54	2.88	0.69	0.03	0.03	0.02	1,908.73	0.07	-	0.03
2023_Top handler_Diesel	7,093,887	3.04	12.38	2.72	0.13	0.12	0.07	6,680.50	0.24	-	0.13
2023_Top handler_Diesel	1,713,275	1.27	2.80	3.42	0.03	0.03	0.02	1,612.65	0.09	-	0.03
2023_Top handler_Diesel	643,252	0.25	0.97	0.24	0.01	0.01	0.01	605.77	0.02	-	0.01
2023_Truck_Diesel	206,909	0.04	0.26	0.06	0.00	0.00	0.00	194.44	0.01	-	0.00
2023_Truck_Diesel	298,653	0.07	0.41	0.10	0.00	0.00	0.00	280.66	0.01	-	0.00
2023_Truck_Diesel	127,477	0.02	0.16	0.04	0.00	0.00	0.00	119.78	0.00	-	0.00
2023_Yard tractor_LNG	7,026,094	1.88	10.03	2.39	0.10	0.10	-	5,226.66	0.48	-	-
2023_Yard tractor_LNG	9,569,984	3.01	14.55	3.37	0.15	0.14	-	7,119.04	0.47	-	-
2023_Yard tractor_LNG	8,189,010	2.91	13.11	2.98	0.14	0.13	-	6,091.74	0.35	-	-
2023_Yard tractor_LNG	3,179,717	0.75	4.35	1.05	0.04	0.04	-	2,365.37	0.32	-	-

Table B1-28. 2023 FEIR Mitigated Scenario Peak Day Emissions

2023		Peak Day Emissions (lb/day)									
General name	**Peak Day Factor**	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2023_Electric Wharf Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Diesel	0.0040	0.01	0.24	0.21	0.00	0.00	0.00	63	0.00	-	0.00
2023_Forklift_Diesel	0.0040	0.08	0.98	0.71	0.00	0.00	0.00	257	0.02	-	0.00
2023_Forklift_Diesel	0.0040	0.74	6.15	4.16	0.02	0.02	0.02	1,360	0.09	-	0.02
2023_Forklift_Diesel	0.0040	0.17	2.11	1.55	0.01	0.01	0.01	564	0.04	-	0.01
2023_Forklift_Diesel	0.0040	0.14	1.91	1.42	0.01	0.01	0.01	522	0.03	-	0.01
2023_Forklift_Diesel	0.0040	0.02	0	0.35	0.00	0.00	0.00	136	0.01	-	0.00
2023_Forklift_Diesel	0.0040	0.03	0.63	0.49	0.00	0.00	0.00	188.26	0.01	-	0.00
2023_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Sweeper_Diesel	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Top handler_Diesel	0.0040	4.76	24.80	5.87	0.26	0.24	0.18	16,090.36	0.59	-	0.26
2023_Top handler_Diesel	0.0040	2.06	10.39	2.44	0.11	0.10	0.06	6,619.85	0.24	-	0.11
2023_Top handler_Diesel	0.0040	4.36	23.36	5.56	0.24	0.22	0.15	15,458.19	0.56	-	0.24
2023_Top handler_Diesel	0.0040	24.62	100.24	22.04	1.08	1.00	0.53	54,103.34	1.97	-	1.08
2023_Top handler_Diesel	0.0040	10.25	22.69	27.67	0.28	0.26	0.13	13,060.34	0.72	-	0.28
2023_Top handler_Diesel	0.0040	2.03	7.84	1.94	0.09	0.09	0.05	4,905.93	0.18	-	0.09
2023_Truck_Diesel	0.0040	0.29	2.08	0.53	0.02	0.02	0.02	1,574.71	0.06	-	0.02
2023_Truck_Diesel	0.0040	0.59	3.34	0.81	0.03	0.03	0.03	2,272.95	0.08	-	0.03
2023_Truck_Diesel	0.0040	0.19	1.31	0.33	0.01	0.01	0.01	970.06	0.04	-	0.01
2023_Yard tractor_LNG	0.0040	15.21	81.20	19.32	0.84	0.77	-	42,329.12	3.90	-	-
2023_Yard tractor_LNG	0.0040	24.38	117.82	27.31	1.24	1.14	-	57,654.93	3.81	-	-
2023_Yard tractor_LNG	0.0040	23.56	106.14	24.11	1.13	1.04	-	49,335.18	2.83	-	-
2023_Yard tractor_LNG	0.0040	6.10	35.20	8.53	0.36	0.33	-	19,156.39	2.61	-	-

8hr/24hr Peaking Factor*: 0.529716683

**Note: Using same peaking factor that is applied to trucks*

Table B1-29. 2023 FEIR Mitigated Scenario Eight Hour Peak Emissions

2023	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2023_Electric Wharf Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Forklift_Diesel	0.01	0.13	0.11	0.00	0.00	0.00	33.49	0.00	0.00	0.00
2023_Forklift_Diesel	0.04	0.52	0.38	0.00	0.00	0.00	136.13	0.01	0.00	0.00
2023_Forklift_Diesel	0.39	3.26	2.20	0.01	0.01	0.01	720.67	0.05	0.00	0.01
2023_Forklift_Diesel	0.09	1.12	0.82	0.00	0.00	0.00	298.78	0.02	0.00	0.00
2023_Forklift_Diesel	0.07	1.01	0.75	0.00	0.00	0.00	276.31	0.02	0.00	0.00
2023_Forklift_Diesel	0.01	0.24	0.19	0.00	0.00	0.00	72.23	0.00	0.00	0.00
2023_Forklift_Diesel	0.02	0.34	0.26	0.00	0.00	0.00	99.73	0.01	0.00	0.00
2023_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Sweeper_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Top handler_Diesel	2.52	13.14	3.11	0.14	0.13	0.10	8523.33	0.31	0.00	0.14
2023_Top handler_Diesel	1.09	5.51	1.29	0.06	0.05	0.03	3506.65	0.13	0.00	0.06
2023_Top handler_Diesel	2.31	12.37	2.95	0.13	0.12	0.08	8188.46	0.30	0.00	0.13
2023_Top handler_Diesel	13.04	53.10	11.67	0.57	0.53	0.28	28659.44	1.04	0.00	0.57
2023_Top handler_Diesel	5.43	12.02	14.65	0.15	0.14	0.07	6918.28	0.38	0.00	0.15
2023_Top handler_Diesel	1.08	4.15	1.03	0.05	0.05	0.03	2598.75	0.09	0.00	0.05
2023_Truck_Diesel	0.15	1.10	0.28	0.01	0.01	0.01	834.15	0.03	0.00	0.01
2023_Truck_Diesel	0.31	1.77	0.43	0.02	0.02	0.01	1204.02	0.04	0.00	0.02
2023_Truck_Diesel	0.10	0.70	0.17	0.01	0.01	0.01	513.86	0.02	0.00	0.01
2023_Yard tractor_LNG	8.06	43.01	10.23	0.44	0.41	0.00	22422.44	2.07	0.00	-
2023_Yard tractor_LNG	12.92	62.41	14.47	0.66	0.60	0.00	30540.78	2.02	0.00	-
2023_Yard tractor_LNG	12.48	56.22	12.77	0.60	0.55	0.00	26133.67	1.50	0.00	-
2023_Yard tractor_LNG	3.23	18.64	4.52	0.19	0.18	0.00	10147.46	1.38	0.00	-

1hr/24hr Peaking Factor*: 0.073685169
**Note: Using same peaking factor that is applied to trucks*

Table B1-30. 2023 FEIR Mitigated Scenario One Hour Peak Emissions

2023	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2023_Electric Wharf Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Forklift_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	4.66	0.00	0.00	0.00
2023_Forklift_Diesel	0.01	0.07	0.05	0.00	0.00	0.00	18.94	0.00	0.00	0.00
2023_Forklift_Diesel	0.05	0.45	0.31	0.00	0.00	0.00	100.25	0.01	0.00	0.00
2023_Forklift_Diesel	0.01	0.16	0.11	0.00	0.00	0.00	41.56	0.00	0.00	0.00
2023_Forklift_Diesel	0.01	0.14	0.10	0.00	0.00	0.00	38.44	0.00	0.00	0.00
2023_Forklift_Diesel	0.00	0.03	0.03	0.00	0.00	0.00	10.05	0.00	0.00	0.00
2023_Forklift_Diesel	0.00	0.05	0.04	0.00	0.00	0.00	13.87	0.00	0.00	0.00
2023_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Sweeper_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2023_Top handler_Diesel	0.35	1.83	0.43	0.02	0.02	0.01	1185.62	0.04	0.00	0.02
2023_Top handler_Diesel	0.15	0.77	0.18	0.01	0.01	0.00	487.79	0.02	0.00	0.01
2023_Top handler_Diesel	0.32	1.72	0.41	0.02	0.02	0.01	1139.04	0.04	0.00	0.02
2023_Top handler_Diesel	1.81	7.39	1.62	0.08	0.07	0.04	3986.61	0.14	0.00	0.08
2023_Top handler_Diesel	0.76	1.67	2.04	0.02	0.02	0.01	962.35	0.05	0.00	0.02
2023_Top handler_Diesel	0.15	0.58	0.14	0.01	0.01	0.00	361.49	0.01	0.00	0.01
2023_Truck_Diesel	0.02	0.15	0.04	0.00	0.00	0.00	116.03	0.00	0.00	0.00
2023_Truck_Diesel	0.04	0.25	0.06	0.00	0.00	0.00	167.48	0.01	0.00	0.00
2023_Truck_Diesel	0.01	0.10	0.02	0.00	0.00	0.00	71.48	0.00	0.00	0.00
2023_Yard tractor_LNG	1.12	5.98	1.42	0.06	0.06	0.00	3119.03	0.29	0.00	-
2023_Yard tractor_LNG	1.80	8.68	2.01	0.09	0.08	0.00	4248.31	0.28	0.00	-
2023_Yard tractor_LNG	1.74	7.82	1.78	0.08	0.08	0.00	3635.27	0.21	0.00	-
2023_Yard tractor_LNG	0.45	2.59	0.63	0.03	0.02	0.00	1411.54	0.19	0.00	-

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2030

Table B1-31. 2030 FEIR Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS
Electric Wharf Crane	0	0	Electric	#N/A	0	N/A	0%	-
Forklift	75	2030	Diesel	0.3	1	N/A	0%	412
Forklift	137	2030	Diesel	0.3	1	N/A	0%	917
Forklift	152	2030	Diesel	0.3	2	N/A	0%	4,377
Forklift	152	2030	Diesel	0.3	2	N/A	0%	1,815
Forklift	160	2030	Diesel	0.3	2	N/A	0%	1,594
Forklift	160	2030	Diesel	0.3	2	N/A	0%	417
Forklift	165	2030	Diesel	0.3	2	N/A	0%	558
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	197	0	Electric	0.2	5	N/A	0%	16,040
Sweeper	100	2030	Diesel	0.68	0	N/A	0%	-
Top handler	250	2030	Diesel	0.59	8	N/A	0%	16,014
Top handler	260	2030	Diesel	0.59	3	N/A	0%	6,318
Top handler	260	2030	Diesel	0.59	8	N/A	0%	14,753
Top handler	260	2030	Diesel	0.59	15	N/A	0%	51,633
Top handler	335	2027	Diesel	0.59	3	N/A	0%	9,678
Top handler	370	2030	Diesel	0.59	1	N/A	0%	3,290
Truck	250	2026	Diesel	0.51	2	N/A	0%	1,812
Truck	250	2026	Diesel	0.51	2	N/A	0%	2,615
Truck	275	2026	Diesel	0.51	1	N/A	0%	1,015
Yard tractor	195	2026	LNG	0.39	53	N/A	0%	103,154
Yard tractor	195	2026	LNG	0.39	59	N/A	0%	140,503
Yard tractor	195	2026	LNG	0.39	43	N/A	0%	120,228
Yard tractor	231	2026	LNG	0.39	23	N/A	0%	39,408

Table B1-32. 2030 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2030_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-
2030_Forklift_Diesel	0.114	3.076	2.751	0.009	0.008	0.010	852.441	0.016	-
2030_Forklift_Diesel	0.061	2.751	0.258	0.009	0.008	0.010	852.444	0.012	-
2030_Forklift_Diesel	0.074	2.821	0.262	0.009	0.008	0.010	852.444	0.012	-
2030_Forklift_Diesel	0.061	2.750	0.258	0.009	0.008	0.010	852.444	0.012	-
2030_Forklift_Diesel	0.060	2.744	0.258	0.009	0.008	0.010	852.444	0.012	-
2030_Forklift_Diesel	0.055	2.712	0.257	0.009	0.008	0.010	852.444	0.012	-
2030_Forklift_Diesel	0.055	2.715	0.257	0.009	0.008	0.010	852.444	0.012	-
2030_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2030_Sweeper_Diesel	0.053	3.050	0.094	0.009	0.008	0.010	852.440	0.015	-
2030_Top handler_Diesel	0.072	0.958	0.261	0.009	0.008	0.010	852.499	0.011	-
2030_Top handler_Diesel	0.073	0.960	0.261	0.009	0.008	0.008	851.853	0.011	-
2030_Top handler_Diesel	0.070	0.955	0.261	0.009	0.008	0.008	851.853	0.011	-
2030_Top handler_Diesel	0.086	0.985	0.265	0.009	0.009	0.008	851.853	0.011	-
2030_Top handler_Diesel	0.176	1.103	0.290	0.012	0.011	0.008	850.344	0.018	-
2030_Top handler_Diesel	0.084	0.967	0.265	0.009	0.009	0.008	851.853	0.011	-
2030_Truck_Diesel	0.105	1.024	0.270	0.010	0.009	0.010	852.423	0.031	-
2030_Truck_Diesel	0.137	1.087	0.279	0.011	0.010	0.010	852.423	0.031	-
2030_Truck_Diesel	0.112	1.037	0.272	0.010	0.009	0.008	852.456	0.031	-
2030_Yard tractor_LNG	0.146	1.104	0.281	0.011	0.010	-	674.859	0.033	-
2030_Yard tractor_LNG	0.167	1.145	0.287	0.011	0.011	-	674.859	0.086	-
2030_Yard tractor_LNG	0.187	1.184	0.293	0.012	0.011	-	674.859	0.080	-
2030_Yard tractor_LNG	0.135	1.082	0.278	0.011	0.010	-	674.859	0.062	-

Table B1-33. 2030 FEIR Mitigated Scenario Annual Mass Emissions

2030		Annual Emissions (tons/year)									
General name	**(HP-Hrs)/Yr**	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2030_Electric Wharf Crane_Electric		-	-	-	-	-	-	-	-	-	-
2030_Forklift_Diesel	9,277	0.00	0.03	0.03	0.00	0.00	0.00	8.72	0.00	-	0.00
2030_Forklift_Diesel	37,704	0.00	0.11	0.01	0.00	0.00	0.00	35.43	0.00	-	0.00
2030_Forklift_Diesel	199,607	0.02	0.62	0.06	0.00	0.00	0.00	187.56	0.00	-	0.00
2030_Forklift_Diesel	82,755	0.01	0.25	0.02	0.00	0.00	0.00	77.76	0.00	-	0.00
2030_Forklift_Diesel	76,530	0.01	0.23	0.02	0.00	0.00	0.00	71.91	0.00	-	0.00
2030_Forklift_Diesel	20,005	0.00	0.06	0.01	0.00	0.00	0.00	18.80	0.00	-	0.00
2030_Forklift_Diesel	27,622	0.00	0.08	0.01	0.00	0.00	0.00	25.95	0.00	-	0.00
2030_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	631,983	-	-	-	-	-	-	-	-	-	-
2030_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-	-
2030_Top handler_Diesel	2,362,055	0.19	2.49	0.68	0.02	0.02	0.02	2,219.63	0.03	-	0.02
2030_Top handler_Diesel	969,128	0.08	1.03	0.28	0.01	0.01	0.01	910.00	0.01	-	0.01
2030_Top handler_Diesel	2,263,034	0.18	2.38	0.65	0.02	0.02	0.02	2,124.97	0.03	-	0.02
2030_Top handler_Diesel	7,920,571	0.75	8.60	2.31	0.08	0.08	0.07	7,437.35	0.09	-	0.08
2030_Top handler_Diesel	1,912,931	0.37	2.32	0.61	0.02	0.02	0.02	1,793.04	0.04	-	0.02
2030_Top handler_Diesel	718,214	0.07	0.77	0.21	0.01	0.01	0.01	674.40	0.01	-	0.01
2030_Truck_Diesel	231,021	0.03	0.26	0.07	0.00	0.00	0.00	217.07	0.01	-	0.00
2030_Truck_Diesel	333,457	0.05	0.40	0.10	0.00	0.00	0.00	313.32	0.01	-	0.00
2030_Truck_Diesel	142,332	0.02	0.16	0.04	0.00	0.00	0.00	133.74	0.00	-	0.00
2030_Yard tractor_LNG	7,844,878	1.26	9.55	2.43	0.09	0.09	-	5,835.75	0.28	-	-
2030_Yard tractor_LNG	10,685,221	1.96	13.49	3.38	0.13	0.12	-	7,948.66	1.01	-	-
2030_Yard tractor_LNG	9,143,315	1.88	11.93	2.95	0.12	0.11	-	6,801.65	0.81	-	-
2030_Yard tractor_LNG	3,550,265	0.53	4.23	1.09	0.04	0.04	-	2,641.02	0.24	-	-

Table B1-34. 2030 FEIR Mitigated Scenario Peak Day Emissions

2030		Peak Day Emissions (lb/day)									
General name	**Peak Day Factor**	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2030_Electric Wharf Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Diesel	0.0040	0.01	0.25	0.23	0.00	0.00	0.00	71	0.00	-	0.00
2030_Forklift_Diesel	0.0040	0.02	0.93	0.09	0.00	0.00	0.00	287	0.00	-	0.00
2030_Forklift_Diesel	0.0040	0.13	5.03	0.47	0.02	0.02	0.02	1,519	0.02	-	0.02
2030_Forklift_Diesel	0.0040	0.05	2.03	0.19	0.01	0.01	0.01	630	0.01	-	0.01
2030_Forklift_Diesel	0.0040	0.04	1.87	0.18	0.01	0.01	0.01	582	0.01	-	0.01
2030_Forklift_Diesel	0.0040	0.01	0	0.05	0.00	0.00	0.00	152	0.00	-	0.00
2030_Forklift_Diesel	0.0040	0.01	0.67	0.06	0.00	0.00	0.00	210.20	0.00	-	0.00
2030_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Sweeper_Diesel	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Top handler_Diesel	0.0040	1.51	20.20	5.51	0.19	0.17	0.20	17,976.12	0.22	-	0.19
2030_Top handler_Diesel	0.0040	0.63	8.30	2.26	0.08	0.07	0.07	7,369.83	0.09	-	0.08
2030_Top handler_Diesel	0.0040	1.42	19.29	5.27	0.18	0.17	0.17	17,209.48	0.21	-	0.18
2030_Top handler_Diesel	0.0040	6.05	69.65	18.74	0.66	0.61	0.59	60,232.82	0.75	-	0.66
2030_Top handler_Diesel	0.0040	3.01	18.83	4.95	0.20	0.18	0.14	14,521.31	0.31	-	0.20
2030_Top handler_Diesel	0.0040	0.54	6.20	1.70	0.06	0.06	0.05	5,461.73	0.07	-	0.06
2030_Truck_Diesel	0.0040	0.22	2.11	0.56	0.02	0.02	0.02	1,758.00	0.06	-	0.02
2030_Truck_Diesel	0.0040	0.41	3.23	0.83	0.03	0.03	0.03	2,537.51	0.09	-	0.03
2030_Truck_Diesel	0.0040	0.14	1.32	0.35	0.01	0.01	0.01	1,083.15	0.04	-	0.01
2030_Yard tractor_LNG	0.0040	10.21	77.30	19.71	0.76	0.70	-	47,261.93	2.30	-	-
2030_Yard tractor_LNG	0.0040	15.90	109.21	27.40	1.09	1.00	-	64,373.74	8.19	-	-
2030_Yard tractor_LNG	0.0040	15.23	96.65	23.89	0.98	0.90	-	55,084.44	6.52	-	-
2030_Yard tractor_LNG	0.0040	4.27	34.29	8.82	0.34	0.31	-	21,388.78	1.97	-	-

8hr/24hr Peaking Factor*: 0.529716683

Note: Using same peaking factor that is applied to trucks

Table B1-35. 2030 FEIR Mitigated Scenario Eight Hour Peak Emissions

2030	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2030_Electric Wharf Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Forklift_Diesel	0.00	0.13	0.12	0.00	0.00	0.00	37.39	0.00	0.00	0.00
2030_Forklift_Diesel	0.01	0.49	0.05	0.00	0.00	0.00	151.99	0.00	0.00	0.00
2030_Forklift_Diesel	0.07	2.66	0.25	0.01	0.01	0.01	804.63	0.01	0.00	0.01
2030_Forklift_Diesel	0.02	1.08	0.10	0.00	0.00	0.00	333.59	0.00	0.00	0.00
2030_Forklift_Diesel	0.02	0.99	0.09	0.00	0.00	0.00	308.50	0.00	0.00	0.00
2030_Forklift_Diesel	0.01	0.26	0.02	0.00	0.00	0.00	80.64	0.00	0.00	0.00
2030_Forklift_Diesel	0.01	0.35	0.03	0.00	0.00	0.00	111.34	0.00	0.00	0.00
2030_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Sweeper_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Top handler_Diesel	0.80	10.70	2.92	0.10	0.09	0.11	9522.25	0.12	0.00	0.10
2030_Top handler_Diesel	0.33	4.40	1.20	0.04	0.04	0.04	3903.92	0.05	0.00	0.04
2030_Top handler_Diesel	0.75	10.22	2.79	0.10	0.09	0.09	9116.15	0.11	0.00	0.10
2030_Top handler_Diesel	3.21	36.89	9.93	0.35	0.32	0.31	31906.33	0.40	0.00	0.35
2030_Top handler_Diesel	1.59	9.97	2.62	0.11	0.10	0.08	7692.18	0.16	0.00	0.11
2030_Top handler_Diesel	0.29	3.28	0.90	0.03	0.03	0.03	2893.17	0.04	0.00	0.03
2030_Truck_Diesel	0.12	1.12	0.30	0.01	0.01	0.01	931.24	0.03	0.00	0.01
2030_Truck_Diesel	0.22	1.71	0.44	0.02	0.02	0.02	1344.16	0.05	0.00	0.02
2030_Truck_Diesel	0.08	0.70	0.18	0.01	0.01	0.01	573.76	0.02	0.00	0.01
2030_Yard tractor_LNG	5.41	40.95	10.44	0.40	0.37	0.00	25035.43	1.22	0.00	-
2030_Yard tractor_LNG	8.42	57.85	14.51	0.58	0.53	0.00	34099.84	4.34	0.00	-
2030_Yard tractor_LNG	8.07	51.20	12.65	0.52	0.48	0.00	29179.15	3.46	0.00	-
2030_Yard tractor_LNG	2.26	18.16	4.67	0.18	0.16	0.00	11329.99	1.04	0.00	-

1hr/24hr Peaking Factor*: 0.073685169

**Note: Using same peaking factor that is applied to trucks*

Table B1-36. 2030 FEIR Mitigated Scenario One Hour Peak Emissions

2030	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2030_Electric Wharf Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Forklift_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	5.20	0.00	0.00	0.00
2030_Forklift_Diesel	0.00	0.07	0.01	0.00	0.00	0.00	21.14	0.00	0.00	0.00
2030_Forklift_Diesel	0.01	0.37	0.03	0.00	0.00	0.00	111.93	0.00	0.00	0.00
2030_Forklift_Diesel	0.00	0.15	0.01	0.00	0.00	0.00	46.40	0.00	0.00	0.00
2030_Forklift_Diesel	0.00	0.14	0.01	0.00	0.00	0.00	42.91	0.00	0.00	0.00
2030_Forklift_Diesel	0.00	0.04	0.00	0.00	0.00	0.00	11.22	0.00	0.00	0.00
2030_Forklift_Diesel	0.00	0.05	0.00	0.00	0.00	0.00	15.49	0.00	0.00	0.00
2030_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Sweeper_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2030_Top handler_Diesel	0.11	1.49	0.41	0.01	0.01	0.01	1324.57	0.02	0.00	0.01
2030_Top handler_Diesel	0.05	0.61	0.17	0.01	0.01	0.01	543.05	0.01	0.00	0.01
2030_Top handler_Diesel	0.10	1.42	0.39	0.01	0.01	0.01	1268.08	0.02	0.00	0.01
2030_Top handler_Diesel	0.45	5.13	1.38	0.05	0.04	0.04	4438.27	0.06	0.00	0.05
2030_Top handler_Diesel	0.22	1.39	0.36	0.01	0.01	0.01	1070.01	0.02	0.00	0.01
2030_Top handler_Diesel	0.04	0.46	0.13	0.00	0.00	0.00	402.45	0.01	0.00	0.00
2030_Truck_Diesel	0.02	0.16	0.04	0.00	0.00	0.00	129.54	0.00	0.00	0.00
2030_Truck_Diesel	0.03	0.24	0.06	0.00	0.00	0.00	186.98	0.01	0.00	0.00
2030_Truck_Diesel	0.01	0.10	0.03	0.00	0.00	0.00	79.81	0.00	0.00	0.00
2030_Yard tractor_LNG	0.75	5.70	1.45	0.06	0.05	0.00	3482.50	0.17	0.00	-
2030_Yard tractor_LNG	1.17	8.05	2.02	0.08	0.07	0.00	4743.39	0.60	0.00	-
2030_Yard tractor_LNG	1.12	7.12	1.76	0.07	0.07	0.00	4058.91	0.48	0.00	-
2030_Yard tractor_LNG	0.31	2.53	0.65	0.02	0.02	0.00	1576.04	0.15	0.00	-

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2036

Table B1-37. 2036 FEIR Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS
Electric Wharf Crane	0	0	Electric	#N/A	0	N/A	0%	-
Forklift	75	2030	Diesel	0.3	1	N/A	0%	412
Forklift	137	2030	Diesel	0.3	1	N/A	0%	917
Forklift	152	2030	Diesel	0.3	2	N/A	0%	4,377
Forklift	152	2030	Diesel	0.3	2	N/A	0%	1,815
Forklift	160	2030	Diesel	0.3	2	N/A	0%	1,594
Forklift	160	2030	Diesel	0.3	2	N/A	0%	417
Forklift	165	2030	Diesel	0.3	2	N/A	0%	558
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	197	0	Electric	0.2	5	N/A	0%	16,040
Sweeper	100	2030	Diesel	0.68	0	N/A	0%	-
Top handler	250	2030	Diesel	0.59	8	N/A	0%	16,014
Top handler	260	2030	Diesel	0.59	3	N/A	0%	6,318
Top handler	260	2030	Diesel	0.59	8	N/A	0%	14,753
Top handler	260	2030	Diesel	0.59	15	N/A	0%	51,633
Top handler	335	2027	Diesel	0.59	3	N/A	0%	9,678
Top handler	370	2030	Diesel	0.59	1	N/A	0%	3,290
Truck	250	2026	Diesel	0.51	2	N/A	0%	1,812
Truck	250	2026	Diesel	0.51	2	N/A	0%	2,615
Truck	275	2026	Diesel	0.51	1	N/A	0%	1,015
Yard tractor	195	2026	LNG	0.39	53	N/A	0%	103,154
Yard tractor	195	2026	LNG	0.39	59	N/A	0%	140,503
Yard tractor	195	2026	LNG	0.39	43	N/A	0%	120,228
Yard tractor	231	2026	LNG	0.39	23	N/A	0%	39,408

Table B1-38. 2036 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2036_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-
2036_Forklift_Diesel	0.164	3.232	2.821	0.010	0.009	0.010	852.428	0.045	-
2036_Forklift_Diesel	0.114	3.056	0.273	0.011	0.010	0.010	852.455	0.031	-
2036_Forklift_Diesel	0.199	3.550	0.296	0.013	0.012	0.010	852.455	0.031	-
2036_Forklift_Diesel	0.113	3.053	0.273	0.010	0.010	0.010	852.455	0.031	-
2036_Forklift_Diesel	0.106	3.010	0.271	0.010	0.009	0.010	852.455	0.031	-
2036_Forklift_Diesel	0.067	2.781	0.260	0.009	0.008	0.010	852.455	0.031	-
2036_Forklift_Diesel	0.071	2.808	0.261	0.009	0.008	0.010	852.455	0.031	-
2036_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2036_Sweeper_Diesel	0.053	3.050	0.094	0.009	0.008	0.010	852.470	0.036	-
2036_Top handler_Diesel	0.187	1.185	0.293	0.012	0.011	0.010	852.009	0.026	-
2036_Top handler_Diesel	0.194	1.198	0.295	0.012	0.011	0.008	853.415	0.026	-
2036_Top handler_Diesel	0.176	1.164	0.290	0.012	0.011	0.008	853.415	0.026	-
2036_Top handler_Diesel	0.283	1.375	0.319	0.014	0.013	0.008	853.415	0.026	-
2036_Top handler_Diesel	0.362	1.376	0.341	0.016	0.015	0.008	852.783	0.031	-
2036_Top handler_Diesel	0.273	1.246	0.316	0.014	0.013	0.008	853.415	0.026	-
2036_Truck_Diesel	0.169	1.149	0.288	0.011	0.011	0.010	852.423	0.031	-
2036_Truck_Diesel	0.239	1.287	0.307	0.013	0.012	0.010	852.423	0.031	-
2036_Truck_Diesel	0.183	1.177	0.292	0.012	0.011	0.008	852.513	0.031	-
2036_Yard tractor_LNG	0.258	1.324	0.312	0.014	0.013	-	674.859	0.068	-
2036_Yard tractor_LNG	0.304	1.415	0.325	0.015	0.014	-	674.859	0.050	-
2036_Yard tractor_LNG	0.347	1.501	0.337	0.016	0.015	-	674.859	0.045	-
2036_Yard tractor_LNG	0.233	1.276	0.305	0.013	0.012	-	674.859	0.027	-

Table B1-39. 2036 FEIR Mitigated Scenario Annual Mass Emissions

2036		Annual Emissions (tons/year)									
General name	**(HP-Hrs)/Yr**	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2036_Electric Wharf Crane_Electric		-	-	-	-	-	-	-	-	-	-
2036_Forklift_Diesel	9,277	0.00	0.03	0.03	0.00	0.00	0.00	8.72	0.00	-	0.00
2036_Forklift_Diesel	37,704	0.00	0.13	0.01	0.00	0.00	0.00	35.43	0.00	-	0.00
2036_Forklift_Diesel	199,607	0.04	0.78	0.07	0.00	0.00	0.00	187.56	0.01	-	0.00
2036_Forklift_Diesel	82,755	0.01	0.28	0.02	0.00	0.00	0.00	77.76	0.00	-	0.00
2036_Forklift_Diesel	76,530	0.01	0.25	0.02	0.00	0.00	0.00	71.91	0.00	-	0.00
2036_Forklift_Diesel	20,005	0.00	0.06	0.01	0.00	0.00	0.00	18.80	0.00	-	0.00
2036_Forklift_Diesel	27,622	0.00	0.09	0.01	0.00	0.00	0.00	25.95	0.00	-	0.00
2036_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	631,983	-	-	-	-	-	-	-	-	-	-
2036_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Diesel	2,362,055	0.49	3.08	0.76	0.03	0.03	0.02	2,218.36	0.07	-	0.03
2036_Top handler_Diesel	969,128	0.21	1.28	0.31	0.01	0.01	0.01	911.67	0.03	-	0.01
2036_Top handler_Diesel	2,263,034	0.44	2.90	0.72	0.03	0.03	0.02	2,128.86	0.06	-	0.03
2036_Top handler_Diesel	7,920,571	2.47	12.01	2.79	0.13	0.12	0.07	7,450.98	0.22	-	0.13
2036_Top handler_Diesel	1,912,931	0.76	2.90	0.72	0.03	0.03	0.02	1,798.19	0.07	-	0.03
2036_Top handler_Diesel	718,214	0.22	0.99	0.25	0.01	0.01	0.01	675.63	0.02	-	0.01
2036_Truck_Diesel	231,021	0.04	0.29	0.07	0.00	0.00	0.00	217.07	0.01	-	0.00
2036_Truck_Diesel	333,457	0.09	0.47	0.11	0.00	0.00	0.00	313.32	0.01	-	0.00
2036_Truck_Diesel	142,332	0.03	0.18	0.05	0.00	0.00	0.00	133.75	0.00	-	0.00
2036_Yard tractor_LNG	7,844,878	2.23	11.45	2.70	0.12	0.11	-	5,835.75	0.59	-	-
2036_Yard tractor_LNG	10,685,221	3.58	16.66	3.82	0.18	0.16	-	7,948.66	0.59	-	-
2036_Yard tractor_LNG	9,143,315	3.50	15.13	3.39	0.16	0.15	-	6,801.65	0.45	-	-
2036_Yard tractor_LNG	3,550,265	0.91	4.99	1.20	0.05	0.05	-	2,641.02	0.11	-	-

Table B1-40. 2036 FEIR Mitigated Scenario Peak Day Emissions

2036		Peak Day Emissions (lb/day)									
General name	**Peak Day Factor**	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2036_Electric Wharf Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Diesel	0.0040	0.01	0.27	0.23	0.00	0.00	0.00	71	0.00	-	0.00
2036_Forklift_Diesel	0.0040	0.04	1.03	0.09	0.00	0.00	0.00	287	0.01	-	0.00
2036_Forklift_Diesel	0.0040	0.36	6.33	0.53	0.02	0.02	0.02	1,519	0.06	-	0.02
2036_Forklift_Diesel	0.0040	0.08	2.26	0.20	0.01	0.01	0.01	630	0.02	-	0.01
2036_Forklift_Diesel	0.0040	0.07	2.06	0.18	0.01	0.01	0.01	582	0.02	-	0.01
2036_Forklift_Diesel	0.0040	0.01	0	0.05	0.00	0.00	0.00	152	0.01	-	0.00
2036_Forklift_Diesel	0.0040	0.02	0.69	0.06	0.00	0.00	0.00	210.20	0.01	-	0.00
2036_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Sweeper_Diesel	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Top handler_Diesel	0.0040	3.94	24.98	6.17	0.25	0.23	0.20	17,965.79	0.54	-	0.25
2036_Top handler_Diesel	0.0040	1.68	10.37	2.55	0.10	0.10	0.07	7,383.34	0.22	-	0.10
2036_Top handler_Diesel	0.0040	3.56	23.51	5.86	0.24	0.22	0.17	17,241.02	0.52	-	0.24
2036_Top handler_Diesel	0.0040	20.04	97.24	22.57	1.02	0.94	0.59	60,343.22	1.82	-	1.02
2036_Top handler_Diesel	0.0040	6.18	23.51	5.82	0.28	0.26	0.14	14,562.96	0.53	-	0.28
2036_Top handler_Diesel	0.0040	1.75	7.99	2.03	0.09	0.08	0.05	5,471.74	0.17	-	0.09
2036_Truck_Diesel	0.0040	0.35	2.37	0.59	0.02	0.02	0.02	1,758.00	0.06	-	0.02
2036_Truck_Diesel	0.0040	0.71	3.83	0.91	0.04	0.04	0.03	2,537.51	0.09	-	0.04
2036_Truck_Diesel	0.0040	0.23	1.50	0.37	0.02	0.01	0.01	1,083.22	0.04	-	0.02
2036_Yard tractor_LNG	0.0040	18.05	92.75	21.86	0.96	0.89	-	47,261.93	4.77	-	-
2036_Yard tractor_LNG	0.0040	28.95	134.96	30.97	1.43	1.31	-	64,373.74	4.81	-	-
2036_Yard tractor_LNG	0.0040	28.34	122.52	27.48	1.31	1.21	-	55,084.44	3.64	-	-
2036_Yard tractor_LNG	0.0040	7.39	40.44	9.68	0.42	0.38	-	21,388.78	0.85	-	-

8hr/24hr Peaking Factor*: 0.529716683

**Note: Using same peaking factor that is applied to trucks*

Table B1-41. 2036 FEIR Mitigated Scenario Eight Hour Peak Emissions

2036	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2036_Electric Wharf Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Forklift_Diesel	0.01	0.14	0.12	0.00	0.00	0.00	37.39	0.00	0.00	0.00
2036_Forklift_Diesel	0.02	0.54	0.05	0.00	0.00	0.00	151.99	0.01	0.00	0.00
2036_Forklift_Diesel	0.19	3.35	0.28	0.01	0.01	0.01	804.64	0.03	0.00	0.01
2036_Forklift_Diesel	0.04	1.19	0.11	0.00	0.00	0.00	333.60	0.01	0.00	0.00
2036_Forklift_Diesel	0.04	1.09	0.10	0.00	0.00	0.00	308.50	0.01	0.00	0.00
2036_Forklift_Diesel	0.01	0.26	0.02	0.00	0.00	0.00	80.64	0.00	0.00	0.00
2036_Forklift_Diesel	0.01	0.37	0.03	0.00	0.00	0.00	111.35	0.00	0.00	0.00
2036_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Sweeper_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Top handler_Diesel	2.09	13.23	3.27	0.13	0.12	0.11	9516.78	0.29	0.00	0.13
2036_Top handler_Diesel	0.89	5.49	1.35	0.06	0.05	0.04	3911.08	0.12	0.00	0.06
2036_Top handler_Diesel	1.89	12.46	3.10	0.13	0.12	0.09	9132.86	0.28	0.00	0.13
2036_Top handler_Diesel	10.62	51.51	11.95	0.54	0.50	0.31	31964.81	0.96	0.00	0.54
2036_Top handler_Diesel	3.27	12.45	3.08	0.15	0.14	0.08	7714.24	0.28	0.00	0.15
2036_Top handler_Diesel	0.93	4.23	1.07	0.05	0.04	0.03	2898.47	0.09	0.00	0.05
2036_Truck_Diesel	0.18	1.26	0.31	0.01	0.01	0.01	931.24	0.03	0.00	0.01
2036_Truck_Diesel	0.38	2.03	0.48	0.02	0.02	0.02	1344.16	0.05	0.00	0.02
2036_Truck_Diesel	0.12	0.79	0.20	0.01	0.01	0.01	573.80	0.02	0.00	0.01
2036_Yard tractor_LNG	9.56	49.13	11.58	0.51	0.47	0.00	25035.43	2.53	0.00	-
2036_Yard tractor_LNG	15.34	71.49	16.41	0.75	0.69	0.00	34099.84	2.55	0.00	-
2036_Yard tractor_LNG	15.01	64.90	14.56	0.69	0.64	0.00	29179.15	1.93	0.00	-
2036_Yard tractor_LNG	3.91	21.42	5.13	0.22	0.20	0.00	11329.99	0.45	0.00	-

1hr/24hr Peaking Factor*: 0.073685169

**Note: Using same peaking factor that is applied to trucks*

Table B1-42. 2036 FEIR Mitigated Scenario One Hour Peak Emissions

2036	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2036_Electric Wharf Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Forklift_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	5.20	0.00	0.00	0.00
2036_Forklift_Diesel	0.00	0.08	0.01	0.00	0.00	0.00	21.14	0.00	0.00	0.00
2036_Forklift_Diesel	0.03	0.47	0.04	0.00	0.00	0.00	111.93	0.00	0.00	0.00
2036_Forklift_Diesel	0.01	0.17	0.01	0.00	0.00	0.00	46.40	0.00	0.00	0.00
2036_Forklift_Diesel	0.01	0.15	0.01	0.00	0.00	0.00	42.91	0.00	0.00	0.00
2036_Forklift_Diesel	0.00	0.04	0.00	0.00	0.00	0.00	11.22	0.00	0.00	0.00
2036_Forklift_Diesel	0.00	0.05	0.00	0.00	0.00	0.00	15.49	0.00	0.00	0.00
2036_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Sweeper_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2036_Top handler_Diesel	0.29	1.84	0.45	0.02	0.02	0.01	1323.81	0.04	0.00	0.02
2036_Top handler_Diesel	0.12	0.76	0.19	0.01	0.01	0.01	544.04	0.02	0.00	0.01
2036_Top handler_Diesel	0.26	1.73	0.43	0.02	0.02	0.01	1270.41	0.04	0.00	0.02
2036_Top handler_Diesel	1.48	7.16	1.66	0.08	0.07	0.04	4446.40	0.13	0.00	0.08
2036_Top handler_Diesel	0.46	1.73	0.43	0.02	0.02	0.01	1073.07	0.04	0.00	0.02
2036_Top handler_Diesel	0.13	0.59	0.15	0.01	0.01	0.00	403.19	0.01	0.00	0.01
2036_Truck_Diesel	0.03	0.17	0.04	0.00	0.00	0.00	129.54	0.00	0.00	0.00
2036_Truck_Diesel	0.05	0.28	0.07	0.00	0.00	0.00	186.98	0.01	0.00	0.00
2036_Truck_Diesel	0.02	0.11	0.03	0.00	0.00	0.00	79.82	0.00	0.00	0.00
2036_Yard tractor_LNG	1.33	6.83	1.61	0.07	0.07	0.00	3482.50	0.35	0.00	-
2036_Yard tractor_LNG	2.13	9.94	2.28	0.11	0.10	0.00	4743.39	0.35	0.00	-
2036_Yard tractor_LNG	2.09	9.03	2.02	0.10	0.09	0.00	4058.91	0.27	0.00	-
2036_Yard tractor_LNG	0.54	2.98	0.71	0.03	0.03	0.00	1576.04	0.06	0.00	-

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2045

Table B1-43. 2045 FEIR Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS
Electric Wharf Crane	0	0	Electric	#N/A	0	N/A	0%	-
Forklift	75	2030	Diesel	0.3	1	N/A	0%	412
Forklift	137	2030	Diesel	0.3	1	N/A	0%	917
Forklift	152	2030	Diesel	0.3	2	N/A	0%	4,377
Forklift	152	2030	Diesel	0.3	2	N/A	0%	1,815
Forklift	160	2030	Diesel	0.3	2	N/A	0%	1,594
Forklift	160	2030	Diesel	0.3	2	N/A	0%	417
Forklift	165	2030	Diesel	0.3	2	N/A	0%	558
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	0	0	Electric	0.2	0	N/A	0%	-
Rub-trd Gantry Crane	197	0	Electric	0.2	5	N/A	0%	16,040
Sweeper	100	2030	Diesel	0.68	0	N/A	0%	-
Top handler	250	2030	Diesel	0.59	8	N/A	0%	16,014
Top handler	260	2030	Diesel	0.59	3	N/A	0%	6,318
Top handler	260	2030	Diesel	0.59	8	N/A	0%	14,753
Top handler	260	2030	Diesel	0.59	15	N/A	0%	51,633
Top handler	335	2043	Diesel	0.59	3	N/A	0%	9,678
Top handler	370	2030	Diesel	0.59	1	N/A	0%	3,290
Truck	250	2038	Diesel	0.51	2	N/A	0%	1,812
Truck	250	2038	Diesel	0.51	2	N/A	0%	2,615
Truck	275	2038	Diesel	0.51	1	N/A	0%	1,015
Yard tractor	195	2038	LNG	0.39	53	N/A	0%	103,154
Yard tractor	195	2038	LNG	0.39	59	N/A	0%	140,503
Yard tractor	195	2038	LNG	0.39	43	N/A	0%	120,228
Yard tractor	231	2038	LNG	0.39	23	N/A	0%	39,408

Table B1-44. 2045 FEIR Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2045_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-
2045_Forklift_Diesel	0.240	3.465	2.924	0.013	0.012	0.010	852.459	0.045	-
2045_Forklift_Diesel	0.193	3.515	0.294	0.013	0.012	0.010	852.467	0.031	-
2045_Forklift_Diesel	0.388	4.644	0.348	0.019	0.018	0.010	852.467	0.031	-
2045_Forklift_Diesel	0.192	3.506	0.294	0.013	0.012	0.010	852.467	0.031	-
2045_Forklift_Diesel	0.175	3.408	0.289	0.012	0.011	0.010	852.467	0.031	-
2045_Forklift_Diesel	0.085	2.885	0.265	0.010	0.009	0.010	852.467	0.031	-
2045_Forklift_Diesel	0.095	2.948	0.268	0.010	0.009	0.010	852.467	0.031	-
2045_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-
2045_Sweeper_Diesel	0.053	3.050	0.094	0.009	0.008	0.010	852.430	0.045	-
2045_Top handler_Diesel	0.359	1.525	0.340	0.016	0.015	0.010	852.408	0.031	-
2045_Top handler_Diesel	0.375	1.557	0.344	0.017	0.015	0.008	851.444	0.031	-
2045_Top handler_Diesel	0.335	1.477	0.333	0.016	0.014	0.008	851.444	0.031	-
2045_Top handler_Diesel	0.580	1.960	0.400	0.022	0.020	0.008	851.444	0.031	-
2045_Top handler_Diesel	0.145	1.057	0.281	0.011	0.010	0.008	852.777	0.011	-
2045_Top handler_Diesel	0.557	1.665	0.394	0.021	0.020	0.008	851.444	0.031	-
2045_Truck_Diesel	0.137	1.087	0.279	0.011	0.010	0.010	852.488	0.023	-
2045_Truck_Diesel	0.188	1.187	0.293	0.012	0.011	0.010	852.488	0.023	-
2045_Truck_Diesel	0.147	1.107	0.282	0.011	0.010	0.008	852.458	0.023	-
2045_Yard tractor_LNG	0.202	1.214	0.297	0.012	0.011	-	674.859	0.021	-
2045_Yard tractor_LNG	0.235	1.280	0.306	0.013	0.012	-	674.859	0.021	-
2045_Yard tractor_LNG	0.267	1.343	0.315	0.014	0.013	-	674.859	0.021	-
2045_Yard tractor_LNG	0.184	1.179	0.292	0.012	0.011	-	674.859	0.050	-

Table B1-45. 2045 FEIR Mitigated Scenario Annual Mass Emissions

2045		Annual Emissions (tons/year)									
General name	**(HP-Hrs)/Yr**	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2045_Electric Wharf Crane_Electric		-	-	-	-	-	-	-	-	-	-
2045_Forklift_Diesel	9,277	0.00	0.04	0.03	0.00	0.00	0.00	8.72	0.00	-	0.00
2045_Forklift_Diesel	37,704	0.01	0.15	0.01	0.00	0.00	0.00	35.43	0.00	-	0.00
2045_Forklift_Diesel	199,607	0.09	1.02	0.08	0.00	0.00	0.00	187.56	0.01	-	0.00
2045_Forklift_Diesel	82,755	0.02	0.32	0.03	0.00	0.00	0.00	77.76	0.00	-	0.00
2045_Forklift_Diesel	76,530	0.01	0.29	0.02	0.00	0.00	0.00	71.91	0.00	-	0.00
2045_Forklift_Diesel	20,005	0.00	0.06	0.01	0.00	0.00	0.00	18.80	0.00	-	0.00
2045_Forklift_Diesel	27,622	0.00	0.09	0.01	0.00	0.00	0.00	25.96	0.00	-	0.00
2045_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	-	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	631,983	-	-	-	-	-	-	-	-	-	-
2045_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-	-
2045_Top handler_Diesel	2,362,055	0.94	3.97	0.89	0.04	0.04	0.02	2,219.40	0.08	-	0.04
2045_Top handler_Diesel	969,128	0.40	1.66	0.37	0.02	0.02	0.01	909.57	0.03	-	0.02
2045_Top handler_Diesel	2,263,034	0.84	3.69	0.83	0.04	0.04	0.02	2,123.95	0.08	-	0.04
2045_Top handler_Diesel	7,920,571	5.07	17.12	3.50	0.19	0.18	0.07	7,433.78	0.27	-	0.19
2045_Top handler_Diesel	1,912,931	0.31	2.23	0.59	0.02	0.02	0.02	1,798.18	0.02	-	0.02
2045_Top handler_Diesel	718,214	0.44	1.32	0.31	0.02	0.02	0.01	674.07	0.02	-	0.02
2045_Truck_Diesel	231,021	0.03	0.28	0.07	0.00	0.00	0.00	217.09	0.01	-	0.00
2045_Truck_Diesel	333,457	0.07	0.44	0.11	0.00	0.00	0.00	313.35	0.01	-	0.00
2045_Truck_Diesel	142,332	0.02	0.17	0.04	0.00	0.00	0.00	133.74	0.00	-	0.00
2045_Yard tractor_LNG	7,844,878	1.74	10.50	2.57	0.11	0.10	-	5,835.75	0.18	-	-
2045_Yard tractor_LNG	10,685,221	2.77	15.07	3.60	0.16	0.14	-	7,948.66	0.25	-	-
2045_Yard tractor_LNG	9,143,315	2.69	13.53	3.17	0.14	0.13	-	6,801.65	0.21	-	-
2045_Yard tractor_LNG	3,550,265	0.72	4.61	1.14	0.05	0.04	-	2,641.02	0.20	-	-

Table B1-46. 2045 FEIR Mitigated Scenario Peak Day Emissions

2045		Peak Day Emissions (lb/day)									
General name	**Peak Day Factor**	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2045_Electric Wharf Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Diesel	0.0040	0.02	0.29	0.24	0.00	0.00	0.00	71	0.00	-	0.00
2045_Forklift_Diesel	0.0040	0.07	1.18	0.10	0.00	0.00	0.00	287	0.01	-	0.00
2045_Forklift_Diesel	0.0040	0.69	8.27	0.62	0.03	0.03	0.02	1,519	0.06	-	0.03
2045_Forklift_Diesel	0.0040	0.14	2.59	0.22	0.01	0.01	0.01	630	0.02	-	0.01
2045_Forklift_Diesel	0.0040	0.12	2.33	0.20	0.01	0.01	0.01	582	0.02	-	0.01
2045_Forklift_Diesel	0.0040	0.02	1	0.05	0.00	0.00	0.00	152	0.01	-	0.00
2045_Forklift_Diesel	0.0040	0.02	0.73	0.07	0.00	0.00	0.00	210.20	0.01	-	0.00
2045_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Sweeper_Diesel	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Top handler_Diesel	0.0040	7.58	32.16	7.17	0.35	0.32	0.20	17,974.21	0.65	-	0.35
2045_Top handler_Diesel	0.0040	3.25	13.47	2.98	0.15	0.13	0.07	7,366.30	0.27	-	0.15
2045_Top handler_Diesel	0.0040	6.77	29.85	6.73	0.32	0.29	0.17	17,201.22	0.63	-	0.32
2045_Top handler_Diesel	0.0040	41.02	138.62	28.32	1.56	1.43	0.59	60,203.92	2.19	-	1.56
2045_Top handler_Diesel	0.0040	2.48	18.05	4.80	0.19	0.17	0.14	14,562.87	0.18	-	0.19
2045_Top handler_Diesel	0.0040	3.57	10.67	2.53	0.14	0.13	0.05	5,459.11	0.20	-	0.14
2045_Truck_Diesel	0.0040	0.28	2.24	0.58	0.02	0.02	0.02	1,758.13	0.05	-	0.02
2045_Truck_Diesel	0.0040	0.56	3.53	0.87	0.04	0.03	0.03	2,537.70	0.07	-	0.04
2045_Truck_Diesel	0.0040	0.19	1.41	0.36	0.01	0.01	0.01	1,083.15	0.03	-	0.01
2045_Yard tractor_LNG	0.0040	14.13	85.03	20.79	0.86	0.79	-	47,261.93	1.47	-	-
2045_Yard tractor_LNG	0.0040	22.43	122.09	29.18	1.26	1.16	-	64,373.74	2.00	-	-
2045_Yard tractor_LNG	0.0040	21.78	109.58	25.68	1.14	1.05	-	55,084.44	1.71	-	-
2045_Yard tractor_LNG	0.0040	5.83	37.36	9.25	0.38	0.35	-	21,388.78	1.60	-	-

8hr/24hr Peaking Factor*: 0.529716683
**Note: Using same peaking factor that is applied to trucks*

Table B1-47. 2045 FEIR Mitigated Scenario Eight Hour Peak Emissions

2045	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2045_Electric Wharf Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Forklift_Diesel	0.01	0.15	0.13	0.00	0.00	0.00	37.40	0.00	0.00	0.00
2045_Forklift_Diesel	0.03	0.63	0.05	0.00	0.00	0.00	151.99	0.01	0.00	0.00
2045_Forklift_Diesel	0.37	4.38	0.33	0.02	0.02	0.01	804.65	0.03	0.00	0.02
2045_Forklift_Diesel	0.08	1.37	0.12	0.01	0.00	0.00	333.60	0.01	0.00	0.01
2045_Forklift_Diesel	0.06	1.23	0.10	0.00	0.00	0.00	308.51	0.01	0.00	0.00
2045_Forklift_Diesel	0.01	0.27	0.03	0.00	0.00	0.00	80.64	0.00	0.00	0.00
2045_Forklift_Diesel	0.01	0.39	0.03	0.00	0.00	0.00	111.35	0.00	0.00	0.00
2045_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Sweeper_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Top handler_Diesel	4.01	17.03	3.80	0.18	0.17	0.11	9521.24	0.35	0.00	0.18
2045_Top handler_Diesel	1.72	7.13	1.58	0.08	0.07	0.04	3902.05	0.14	0.00	0.08
2045_Top handler_Diesel	3.59	15.81	3.57	0.17	0.16	0.09	9111.77	0.33	0.00	0.17
2045_Top handler_Diesel	21.73	73.43	15.00	0.82	0.76	0.31	31891.02	1.16	0.00	0.82
2045_Top handler_Diesel	1.31	9.56	2.55	0.10	0.09	0.08	7714.20	0.10	0.00	0.10
2045_Top handler_Diesel	1.89	5.65	1.34	0.07	0.07	0.03	2891.78	0.11	0.00	0.07
2045_Truck_Diesel	0.15	1.19	0.30	0.01	0.01	0.01	931.31	0.03	0.00	0.01
2045_Truck_Diesel	0.30	1.87	0.46	0.02	0.02	0.02	1344.26	0.04	0.00	0.02
2045_Truck_Diesel	0.10	0.74	0.19	0.01	0.01	0.01	573.76	0.02	0.00	0.01
2045_Yard tractor_LNG	7.49	45.04	11.01	0.46	0.42	0.00	25035.43	0.78	0.00	-
2045_Yard tractor_LNG	11.88	64.67	15.46	0.67	0.61	0.00	34099.84	1.06	0.00	-
2045_Yard tractor_LNG	11.54	58.05	13.60	0.61	0.56	0.00	29179.15	0.91	0.00	-
2045_Yard tractor_LNG	3.09	19.79	4.90	0.20	0.18	0.00	11329.99	0.85	0.00	-

1hr/24hr Peaking Factor*: 0.073685169

**Note: Using same peaking factor that is applied to trucks*

Table B1-48. 2045 FEIR Mitigated Scenario One Hour Peak Emissions

2045	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2045_Electric Wharf Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Forklift_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	5.20	0.00	0.00	0.00
2045_Forklift_Diesel	0.00	0.09	0.01	0.00	0.00	0.00	21.14	0.00	0.00	0.00
2045_Forklift_Diesel	0.05	0.61	0.05	0.00	0.00	0.00	111.93	0.00	0.00	0.00
2045_Forklift_Diesel	0.01	0.19	0.02	0.00	0.00	0.00	46.41	0.00	0.00	0.00
2045_Forklift_Diesel	0.01	0.17	0.01	0.00	0.00	0.00	42.91	0.00	0.00	0.00
2045_Forklift_Diesel	0.00	0.04	0.00	0.00	0.00	0.00	11.22	0.00	0.00	0.00
2045_Forklift_Diesel	0.00	0.05	0.00	0.00	0.00	0.00	15.49	0.00	0.00	0.00
2045_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Rub-trd Gantry Crane_Electric	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Sweeper_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
2045_Top handler_Diesel	0.56	2.37	0.53	0.03	0.02	0.01	1324.43	0.05	0.00	0.03
2045_Top handler_Diesel	0.24	0.99	0.22	0.01	0.01	0.01	542.79	0.02	0.00	0.01
2045_Top handler_Diesel	0.50	2.20	0.50	0.02	0.02	0.01	1267.47	0.05	0.00	0.02
2045_Top handler_Diesel	3.02	10.21	2.09	0.11	0.11	0.04	4436.14	0.16	0.00	0.11
2045_Top handler_Diesel	0.18	1.33	0.35	0.01	0.01	0.01	1073.07	0.01	0.00	0.01
2045_Top handler_Diesel	0.26	0.79	0.19	0.01	0.01	0.00	402.26	0.01	0.00	0.01
2045_Truck_Diesel	0.02	0.17	0.04	0.00	0.00	0.00	129.55	0.00	0.00	0.00
2045_Truck_Diesel	0.04	0.26	0.06	0.00	0.00	0.00	186.99	0.01	0.00	0.00
2045_Truck_Diesel	0.01	0.10	0.03	0.00	0.00	0.00	79.81	0.00	0.00	0.00
2045_Yard tractor_LNG	1.04	6.27	1.53	0.06	0.06	0.00	3482.50	0.11	0.00	-
2045_Yard tractor_LNG	1.65	9.00	2.15	0.09	0.09	0.00	4743.39	0.15	0.00	-
2045_Yard tractor_LNG	1.61	8.07	1.89	0.08	0.08	0.00	4058.91	0.13	0.00	-
2045_Yard tractor_LNG	0.43	2.75	0.68	0.03	0.03	0.00	1576.04	0.12	0.00	-

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2008

Table B1-49. 2008 Proposed Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Electric Wharf Crane	(blank)	(blank)	Electric	(blank)	9		0%	-	0%	0%	0%
Forklift	160	2005	LPG	0.3	3		0%	366	0%	0%	0%
Forklift	160	2008	LPG	0.3	2		0%	176	0%	0%	0%
Forklift	165	1995	LPG	0.3	2		0%	17	0%	0%	0%
Forklift	165	2002	LPG	0.3	2		0%	138	0%	0%	0%
Forklift	152	1994	Diesel	0.3	1		0%	83	0%	0%	0%
Forklift	152	2004	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	152	2005	Diesel	0.3	2		0%	726	0%	0%	0%
Forklift	190	1997	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	190	1999	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	190	2004	Diesel	0.3	1		0%	363	0%	0%	0%
Forklift	215	1993	Diesel	0.3	1		0%	363	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2		0%	1,150	0%	0%	0%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8		0%	2,023	0%	0%	0%
Rub-trd Gantry Crane	685	1999	Diesel	0.2	1		0%	12	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	6		0%	4,015	0%	0%	0%
Rub-trd Gantry Crane	180	1983	Diesel	0.2	2		0%	7	0%	0%	0%
Rub-trd Gantry Crane	180	1984	Diesel	0.2	1		0%	1	0%	0%	0%
Top handler	250	1997	Diesel	0.59	5	DOC	100%	778	30%	70%	70%
Top handler	250	2002	Diesel	0.59	9	DOC	100%	6,556	30%	70%	70%
Top handler	250	1990	Diesel	0.59	4	DOC	100%	1,786	30%	70%	70%
Top handler	260	2006	Diesel	0.59	6	DOC	100%	5,484	30%	70%	70%
Yard tractor	174	2000	LPG	0.39	2		0%	92	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	21,671	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	31,225	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	19,704	0%	0%	0%
Truck	250	2005	Diesel	0.51	2		0%	516	0%	0%	0%
Truck	250	2008	Diesel	0.51	1		0%	138	0%	0%	0%
Sweeper	100	1995	Diesel	0.68	1		0%	32	0%	0%	0%
Sweeper	100	2005	Diesel	0.68	1		0%	83	0%	0%	0%
Man Lift	80	1995	Diesel	0.51	2		0%	148	0%	0%	0%
Side pick	152	1990	Diesel	0.59	1	DOC	100%	0	30%	70%	70%
Side pick	152	1996	Diesel	0.59	1	DOC	100%	0	30%	70%	70%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-50. 2008 Proposed Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
Electric Wharf Crane_Electric_(blank)_(blank)	-	-	-	-	-	-	-	-	-
Forklift_LPG_160_2005	0.286	17.683	1.946	0.060	0.060	-	674.859	0.084	-
Forklift_LPG_160_2008	0.108	2.375	1.040	0.060	0.060	-	674.859	0.021	-
Forklift_LPG_165_1995	1.397	17.030	10.574	0.060	0.060	-	674.859	0.213	-
Forklift_LPG_165_2002	1.207	17.636	8.651	0.060	0.060	-	674.859	0.145	-
Forklift_Diesel_152_1994	0.830	2.945	8.202	0.342	0.315	0.010	852.465	0.172	-
Forklift_Diesel_152_2004	0.370	3.057	4.831	0.206	0.190	0.010	852.476	0.074	-
Forklift_Diesel_152_2005	0.277	2.986	4.454	0.166	0.152	0.010	852.445	0.056	-
Forklift_Diesel_190_1997	0.524	1.212	7.575	0.196	0.181	0.010	852.438	0.081	-
Forklift_Diesel_190_1999	0.493	1.163	7.300	0.184	0.169	0.010	852.453	0.081	-
Forklift_Diesel_190_2004	0.269	1.042	4.685	0.112	0.103	0.010	852.451	0.056	-
Forklift_Diesel_215_1993	1.247	3.842	10.410	0.592	0.544	0.010	852.372	0.172	-
Rub-trd Gantry Crane_Diesel_454_2004	0.323	1.064	4.503	0.125	0.115	0.008	852.735	0.047	-
Rub-trd Gantry Crane_Diesel_612_2003	0.253	1.002	4.546	0.110	0.101	0.008	840.339	0.053	-
Rub-trd Gantry Crane_Diesel_685_1999	0.341	0.926	5.959	0.122	0.112	0.009	845.926	0.073	-
Rub-trd Gantry Crane_Diesel_685_2005	0.313	1.057	4.482	0.123	0.113	0.009	864.986	0.042	-
Rub-trd Gantry Crane_Diesel_180_1983	1.006	4.340	10.314	0.406	0.374	0.010	853.645	0.238	-
Rub-trd Gantry Crane_Diesel_180_1984	0.994	4.311	10.254	0.399	0.367	0.010	853.026	0.238	-
Top handler_Diesel_250_1997	0.507	1.185	7.425	0.189	0.174	0.010	852.373	0.081	-
Top handler_Diesel_250_2002	0.557	1.263	7.865	0.210	0.193	0.010	852.779	0.074	-
Top handler_Diesel_250_1990	2.016	5.498	14.487	1.052	0.968	0.010	854.180	0.173	-
Top handler_Diesel_260_2006	0.319	1.106	4.610	0.123	0.113	0.008	851.207	0.032	-
Yard tractor_LPG_174_2000	1.417	17.506	10.632	0.060	0.060	-	674.859	0.215	-
Yard tractor_LPG_195_2004	0.941	21.968	4.990	0.060	0.060	-	674.859	0.102	-
Yard tractor_LPG_195_2007	0.450	19.048	2.358	0.060	0.060	-	674.859	0.027	-
Yard tractor_LPG_195_2008	0.158	2.392	1.057	0.060	0.060	-	674.859	0.021	-
Truck_Diesel_250_2005	0.201	0.991	4.328	0.102	0.093	0.010	852.036	0.040	-
Truck_Diesel_250_2008	0.115	0.929	2.334	0.090	0.083	0.010	852.493	0.022	-
Sweeper_Diesel_100_1995	1.102	3.604	8.369	0.541	0.498	0.010	852.463	0.251	-
Sweeper_Diesel_100_2005	0.323	3.216	5.021	0.247	0.228	0.010	852.435	0.069	-
Man Lift_Diesel_80_1995	1.182	3.757	8.681	0.601	0.553	0.010	852.460	0.251	-
Side pick_Diesel_152_1990	0.717	2.701	7.601	0.274	0.252	0.010	852.398	0.172	-
Side pick_Diesel_152_1996	0.716	2.701	7.600	0.274	0.252	0.010	852.414	0.172	-

Table B1-51. 2008 Proposed Mitigated Scenario Annual Mass Emissions

		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2008_Electric Wharf Crane_Electric		-	-	-	-	-	-	-	-	-	-
2008_Forklift_LPG	17,570	0.01	0.34	0.04	0.00	0.00	-	13	0.00	-	-
2008_Forklift_LPG	8,471	0.00	0.02	0.01	0.00	0.00	-	6	0.00	-	-
2008_Forklift_LPG	863	0.00	0.02	0.01	0.00	0.00	-	1	0.00	-	-
2008_Forklift_LPG	6,813	0.01	0.13	0.06	0.00	0.00	-	5	0.00	-	-
2008_Forklift_Diesel	3,792	0.00	0.01	0.03	0.00	0.00	0.00	4	0.00	-	0.00
2008_Forklift_Diesel	16,559	0.01	0	0.09	0.00	0.00	0.00	16	0.00	-	0.00
2008_Forklift_Diesel	33,119	0.01	0.11	0.16	0.01	0.01	0.00	31.12	0.00	-	0.01
2008_Forklift_Diesel	20,699	0.01	0.03	0.17	0.00	0.00	0.00	19.45	0.00	-	0.00
2008_Forklift_Diesel	20,699	0.01	0.03	0.17	0.00	0.00	0.00	19.45	0.00	-	0.00
2008_Forklift_Diesel	20,699	0.01	0.02	0.11	0.00	0.00	0.00	19.45	0.00	-	0.00
2008_Forklift_Diesel	23,423	0.03	0.10	0.27	0.02	0.01	0.00	22.01	0.00	-	0.02
2008_Rub-trd Gantry Crane_Diesel	104,460	0.04	0.12	0.52	0.01	0.01	0.00	98.19	0.01	-	0.01
2008_Rub-trd Gantry Crane_Diesel	247,580	0.07	0.27	1.24	0.03	0.03	0.00	229.33	0.01	-	0.03
2008_Rub-trd Gantry Crane_Diesel	1,692	0.00	0.00	0.01	0.00	0.00	0.00	1.58	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	549,995	0.19	0.64	2.72	0.07	0.07	0.01	524.40	0.03	-	0.07
2008_Rub-trd Gantry Crane_Diesel	261	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	52	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	-	0.00
2008_Top handler_Diesel	114,787	0.02	0.04	0.94	0.02	0.02	0.00	107.85	0.01	-	0.02
2008_Top handler_Diesel	966,988	0.18	0.40	8.38	0.16	0.14	0.01	908.98	0.08	-	0.16
2008_Top handler_Diesel	263,481	0.18	0.48	4.21	0.21	0.20	0.00	248.08	0.05	-	0.21
2008_Top handler_Diesel	841,278	0.09	0.31	4.28	0.08	0.07	0.01	789.35	0.03	-	0.08
2008_Yard tractor_LPG	6,259	0.01	0.12	0.07	0.00	0.00	-	4.66	0.00	-	-
2008_Yard tractor_LPG	1,648,109	1.71	39.91	9.07	0.11	0.11	-	1,226.02	0.18	-	-
2008_Yard tractor_LPG	2,374,689	1.18	49.86	6.17	0.16	0.16	-	1,766.51	0.07	-	-
2008_Yard tractor_LPG	1,498,452	0.26	3.95	1.75	0.10	0.10	-	1,114.69	0.03	-	-
2008_Truck_Diesel	65,840	0.01	0.07	0.31	0.01	0.01	0.00	61.84	0.00	-	0.01
2008_Truck_Diesel	17,548	0.00	0.02	0.05	0.00	0.00	0.00	16.49	0.00	-	0.00
2008_Sweeper_Diesel	2,173	0.00	0.01	0.02	0.00	0.00	0.00	2.04	0.00	-	0.00
2008_Sweeper_Diesel	5,630	0.00	0.02	0.03	0.00	0.00	0.00	5.29	0.00	-	0.00
2008_Man Lift_Diesel	6,045	0.01	0.03	0.06	0.00	0.00	0.00	5.68	0.00	-	0.00
2008_Side pick_Diesel	33	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	-	0.00
2008_Side pick_Diesel	33	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	-	0.00

Table B1-52. 2008 Proposed Mitigated Scenario Peak Day Emissions

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2008_Electric Wharf Crane_Electric	0.0043	-	-	-	-	-	-	-	-	-	-
2008_Forklift_LPG	0.0043	0.05	2.92	0.32	0.01	0.01	-	112	0.01	-	-
2008_Forklift_LPG	0.0043	0.01	0.19	0.08	0.00	0.00	-	54	0.00	-	-
2008_Forklift_LPG	0.0043	0.01	0.14	0.09	0.00	0.00	-	5	0.00	-	-
2008_Forklift_LPG	0.0043	0.08	1.13	0.55	0.00	0.00	-	43	0.01	-	-
2008_Forklift_Diesel	0.0043	0.03	0.11	0.29	0.01	0.01	0.00	30	0.01	-	0.01
2008_Forklift_Diesel	0.0043	0.06	0	0.75	0.03	0.03	0.00	133	0.01	-	0.03
2008_Forklift_Diesel	0.0043	0.09	0.93	1.39	0.05	0.05	0.00	265.77	0.02	-	0.05
2008_Forklift_Diesel	0.0043	0.10	0.24	1.48	0.04	0.04	0.00	166.10	0.02	-	0.04
2008_Forklift_Diesel	0.0043	0.10	0.23	1.42	0.04	0.03	0.00	166.11	0.02	-	0.04
2008_Forklift_Diesel	0.0043	0.05	0.20	0.91	0.02	0.02	0.00	166.11	0.01	-	0.02
2008_Forklift_Diesel	0.0043	0.27	0.85	2.30	0.13	0.12	0.00	187.94	0.04	-	0.13
2008_Rub-trd Gantry Crane_Diesel	0.0043	0.32	1.05	4.43	0.12	0.11	0.01	838.54	0.05	-	0.12
2008_Rub-trd Gantry Crane_Diesel	0.0043	0.59	2.34	10.60	0.26	0.24	0.02	1,958.53	0.12	-	0.26
2008_Rub-trd Gantry Crane_Diesel	0.0043	0.01	0.01	0.09	0.00	0.00	0.00	13.47	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	0.0043	1.62	5.47	23.20	0.64	0.59	0.05	4,478.45	0.22	-	0.64
2008_Rub-trd Gantry Crane_Diesel	0.0043	0.00	0.01	0.03	0.00	0.00	0.00	2.10	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	0.0043	0.00	0.00	0.01	0.00	0.00	0.00	0.42	0.00	-	0.00
2008_Top handler_Diesel	0.0043	0.16	0.38	8.02	0.14	0.13	0.01	921.05	0.09	-	0.14
2008_Top handler_Diesel	0.0043	1.52	3.45	71.59	1.34	1.23	0.09	7,762.78	0.68	-	1.34
2008_Top handler_Diesel	0.0043	1.50	4.09	35.93	1.83	1.68	0.02	2,118.64	0.43	-	1.83
2008_Top handler_Diesel	0.0043	0.76	2.63	36.51	0.68	0.63	0.07	6,741.15	0.26	-	0.68
2008_Yard tractor_LPG	0.0043	0.08	1.03	0.63	0.00	0.00	-	39.76	0.01	-	-
2008_Yard tractor_LPG	0.0043	14.59	340.83	77.42	0.93	0.93	-	10,470.29	1.58	-	-
2008_Yard tractor_LPG	0.0043	10.07	425.81	52.71	1.33	1.33	-	15,086.19	0.60	-	-
2008_Yard tractor_LPG	0.0043	2.23	33.74	14.91	0.84	0.84	-	9,519.53	0.30	-	-
2008_Truck_Diesel	0.0043	0.12	0.61	2.68	0.06	0.06	0.01	528.09	0.02	-	0.06
2008_Truck_Diesel	0.0043	0.02	0.15	0.39	0.01	0.01	0.00	140.82	0.00	-	0.01
2008_Sweeper_Diesel	0.0043	0.02	0.07	0.17	0.01	0.01	0.00	17.44	0.01	-	0.01
2008_Sweeper_Diesel	0.0043	0.02	0.17	0.27	0.01	0.01	0.00	45.18	0.00	-	0.01
2008_Man Lift_Diesel	0.0043	0.07	0.21	0.49	0.03	0.03	0.00	48.51	0.01	-	0.03
2008_Side pick_Diesel	0.0043	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	-	0.00
2008_Side pick_Diesel	0.0043	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	-	0.00

8hr/24hr Peaking Factor*: 0.619386395

**Note: Using same peaking factor that is applied to trucks*

Table B1-53. 2008 Proposed Mitigated Scenario Eight Hour Peak Emissions

	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2008_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-	-
2008_Forklift_LPG	0.03	1.81	0.20	0.01	0.01	-	69	0.01	-	-
2008_Forklift_LPG	0.01	0.12	0.05	0.00	0.00	-	33	0.00	-	-
2008_Forklift_LPG	0.01	0.09	0.05	0.00	0.00	-	3	0.00	-	-
2008_Forklift_LPG	0.05	0.70	0.34	0.00	0.00	-	27	0.01	-	-
2008_Forklift_Diesel	0.02	0.07	0.18	0.01	0.01	0.00	19	0.00	-	0.01
2008_Forklift_Diesel	0.04	0	0.47	0.02	0.02	0.00	82	0.01	-	0.02
2008_Forklift_Diesel	0.05	0.58	0.86	0.03	0.03	0.00	164.61	0.01	-	0.03
2008_Forklift_Diesel	0.06	0.15	0.91	0.02	0.02	0.00	102.88	0.01	-	0.02
2008_Forklift_Diesel	0.06	0.14	0.88	0.02	0.02	0.00	102.88	0.01	-	0.02
2008_Forklift_Diesel	0.03	0.13	0.57	0.01	0.01	0.00	102.88	0.01	-	0.01
2008_Forklift_Diesel	0.17	0.52	1.42	0.08	0.07	0.00	116.41	0.02	-	0.08
2008_Rub-trd Gantry Crane_Diesel	0.20	0.65	2.74	0.08	0.07	0.01	519.38	0.03	-	0.08
2008_Rub-trd Gantry Crane_Diesel	0.37	1.45	6.56	0.16	0.15	0.01	1,213.09	0.08	-	0.16
2008_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.06	0.00	0.00	0.00	8.34	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	1.01	3.39	14.37	0.39	0.36	0.03	2,773.89	0.14	-	0.39
2008_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.02	0.00	0.00	0.00	1.30	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	-	0.00
2008_Top handler_Diesel	0.10	0.24	4.97	0.09	0.08	0.01	570.49	0.05	-	0.09
2008_Top handler_Diesel	0.94	2.14	44.34	0.83	0.76	0.05	4,808.16	0.42	-	0.83
2008_Top handler_Diesel	0.93	2.53	22.26	1.13	1.04	0.01	1,312.26	0.27	-	1.13
2008_Top handler_Diesel	0.47	1.63	22.62	0.42	0.39	0.04	4,175.38	0.16	-	0.42
2008_Yard tractor_LPG	0.05	0.64	0.39	0.00	0.00	-	24.63	0.01	-	-
2008_Yard tractor_LPG	9.04	211.10	47.95	0.57	0.57	-	6,485.16	0.98	-	-
2008_Yard tractor_LPG	6.23	263.74	32.65	0.83	0.83	-	9,344.18	0.37	-	-
2008_Yard tractor_LPG	1.38	20.90	9.24	0.52	0.52	-	5,896.27	0.18	-	-
2008_Truck_Diesel	0.08	0.38	1.66	0.04	0.04	0.00	327.09	0.02	-	0.04
2008_Truck_Diesel	0.01	0.10	0.24	0.01	0.01	0.00	87.23	0.00	-	0.01
2008_Sweeper_Diesel	0.01	0.05	0.11	0.01	0.01	0.00	10.80	0.00	-	0.01
2008_Sweeper_Diesel	0.01	0.11	0.16	0.01	0.01	0.00	27.98	0.00	-	0.01
2008_Man Lift_Diesel	0.04	0.13	0.31	0.02	0.02	0.00	30.05	0.01	-	0.02
2008_Side pick_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	-	0.00
2008_Side pick_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	-	0.00

1hr/24hr Peaking Factor*: 0.088599477

**Note: Using same peaking factor that is applied to trucks*

Table B1-54. 2008 Proposed Mitigated Scenario One Hour Peak Emissions

	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2008_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-	-
2008_Forklift_LPG	0.00	0.26	0.03	0.00	0.00	-	10	0.00	-	-
2008_Forklift_LPG	0.00	0.02	0.01	0.00	0.00	-	5	0.00	-	-
2008_Forklift_LPG	0.00	0.01	0.01	0.00	0.00	-	0	0.00	-	-
2008_Forklift_LPG	0.01	0.10	0.05	0.00	0.00	-	4	0.00	-	-
2008_Forklift_Diesel	0.00	0.01	0.03	0.00	0.00	0.00	3	0.00	-	0.00
2008_Forklift_Diesel	0.01	0	0.07	0.00	0.00	0.00	12	0.00	-	0.00
2008_Forklift_Diesel	0.01	0.08	0.12	0.00	0.00	0.00	23.55	0.00	-	0.00
2008_Forklift_Diesel	0.01	0.02	0.13	0.00	0.00	0.00	14.72	0.00	-	0.00
2008_Forklift_Diesel	0.01	0.02	0.13	0.00	0.00	0.00	14.72	0.00	-	0.00
2008_Forklift_Diesel	0.00	0.02	0.08	0.00	0.00	0.00	14.72	0.00	-	0.00
2008_Forklift_Diesel	0.02	0.08	0.20	0.01	0.01	0.00	16.65	0.00	-	0.01
2008_Rub-trd Gantry Crane_Diesel	0.03	0.09	0.39	0.01	0.01	0.00	74.29	0.00	-	0.01
2008_Rub-trd Gantry Crane_Diesel	0.05	0.21	0.94	0.02	0.02	0.00	173.52	0.01	-	0.02
2008_Rub-trd Gantry Crane_Diesel	0.00	0.00	0.01	0.00	0.00	0.00	1.19	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	0.14	0.48	2.06	0.06	0.05	0.00	396.79	0.02	-	0.06
2008_Rub-trd Gantry Crane_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	-	0.00
2008_Rub-trd Gantry Crane_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	-	0.00
2008_Top handler_Diesel	0.01	0.03	0.71	0.01	0.01	0.00	81.60	0.01	-	0.01
2008_Top handler_Diesel	0.13	0.31	6.34	0.12	0.11	0.01	687.78	0.06	-	0.12
2008_Top handler_Diesel	0.13	0.36	3.18	0.16	0.15	0.00	187.71	0.04	-	0.16
2008_Top handler_Diesel	0.07	0.23	3.23	0.06	0.06	0.01	597.26	0.02	-	0.06
2008_Yard tractor_LPG	0.01	0.09	0.06	0.00	0.00	-	3.52	0.00	-	-
2008_Yard tractor_LPG	1.29	30.20	6.86	0.08	0.08	-	927.66	0.14	-	-
2008_Yard tractor_LPG	0.89	37.73	4.67	0.12	0.12	-	1,336.63	0.05	-	-
2008_Yard tractor_LPG	0.20	2.99	1.32	0.07	0.07	-	843.43	0.03	-	-
2008_Truck_Diesel	0.01	0.05	0.24	0.01	0.01	0.00	46.79	0.00	-	0.01
2008_Truck_Diesel	0.00	0.01	0.03	0.00	0.00	0.00	12.48	0.00	-	0.00
2008_Sweeper_Diesel	0.00	0.01	0.02	0.00	0.00	0.00	1.55	0.00	-	0.00
2008_Sweeper_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	4.00	0.00	-	0.00
2008_Man Lift_Diesel	0.01	0.02	0.04	0.00	0.00	0.00	4.30	0.00	-	0.00
2008_Side pick_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	-	0.00
2008_Side pick_Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	-	0.00

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2012

Table B1-55. 2012 Proposed Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Electric Wharf Crane					13		0%	-	0%	0%	0%
Forklift	160	2005	LPG	0.3	3		0%	300	0%	0%	0%
Forklift	160	2008	LPG	0.3	2		0%	226	0%	0%	0%
Forklift	160	2011	LPG	0.3	1		0%	69	0%	0%	0%
Forklift	165	1995	LPG	0.3	1		0%	8	0%	0%	0%
Forklift	165	2002	LPG	0.3	2		0%	405	0%	0%	0%
Forklift	152	1994	Diesel	0.3	1		0%	113	0%	0%	0%
Forklift	152	2004	Diesel	0.3	1		0%	855	0%	0%	0%
Forklift	152	2005	Diesel	0.3	2		0%	1,005	0%	0%	0%
Forklift	153	1979	Diesel	0.3	1		0%	80	0%	0%	0%
Forklift	153	1988	Diesel	0.3	1		0%	-	0%	0%	0%
Forklift	153	2009	Diesel	0.3	1		0%	101	0%	0%	0%
Forklift	190	2004	Diesel	0.3	1		0%	447	0%	0%	0%
Forklift	137	2007	Diesel	0.3	2		0%	1,000	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	5		0%	5,015	0%	0%	0%
Rub-trd Gantry Crane	685	1999	Diesel	0.2	3		0%	1,230	0%	0%	0%
Rub-trd Gantry Crane	612	2003	Diesel	0.2	8		0%	8,877	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2		0%	1,479	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1		0%	422	0%	0%	0%
Top handler	250	2002	Diesel	0.59	9	DOC	100%	7,016	30%	70%	70%
Top handler	260	2007	Diesel	0.59	6	DOC	100%	4,931	30%	70%	70%
Top handler	260	2008	Diesel	0.59	15		0%	18,722	0%	0%	0%
Top handler	260	2006	Diesel	0.59	6	DOC	100%	5,131	30%	70%	70%
Top handler	335	2011	Diesel	0.59	3		0%	2,109	0%	0%	0%
Yard tractor	174	2000	LPG	0.39	2		0%	344	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	37,114	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	50,429	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	40,350	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	23		0%	12,319	0%	0%	0%
Sweeper	100	1995	Diesel	0.68	1		0%	-	0%	0%	0%
Sweeper	100	2005	Diesel	0.68	1		0%	604	0%	0%	0%
Truck	250	2005	Diesel	0.51	2		0%	678	0%	0%	0%
Truck	250	2008	Diesel	0.51	2		0%	1,089	0%	0%	0%
Truck	275	1993	Diesel	0.51	1		0%	-	0%	0%	0%
Truck	275	2001	Diesel	0.51	1		0%	179	0%	0%	0%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-56. 2012 Proposed Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2012_Electric Wharf Crane_Electric_(blank	-	-	-	-	-	-	-	-	-
2012_Forklift_LPG_160_2005	0.371	18.388	2.159	0.060	0.060	-	674.859	0.154	-
2012_Forklift_LPG_160_2008	0.185	2.401	1.066	0.060	0.060	-	674.859	0.045	-
2012_Forklift_LPG_160_2011	0.034	3.079	0.323	0.060	0.060	-	674.859	0.027	-
2012_Forklift_LPG_165_1995	1.383	16.706	10.535	0.060	0.060	-	674.859	0.250	-
2012_Forklift_LPG_165_2002	1.321	20.279	8.925	0.060	0.060	-	674.859	0.171	-
2012_Forklift_Diesel_152_1994	0.856	3.001	8.339	0.357	0.329	0.010	852.452	0.172	-
2012_Forklift_Diesel_152_2004	0.650	3.780	5.552	0.315	0.290	0.010	852.464	0.087	-
2012_Forklift_Diesel_152_2005	0.384	3.268	4.697	0.203	0.187	0.010	852.472	0.076	-
2012_Forklift_Diesel_153_1979	1.313	5.019	12.540	0.550	0.506	0.010	849.579	0.172	-
2012_Forklift_Diesel_153_1988	0.716	2.700	7.598	0.274	0.252	0.010	849.579	0.172	-
2012_Forklift_Diesel_153_2009	0.126	2.757	2.347	0.118	0.109	0.010	852.433	0.046	-
2012_Forklift_Diesel_190_2004	0.339	1.112	4.883	0.126	0.116	0.010	852.465	0.068	-
2012_Forklift_Diesel_137_2007	0.266	3.135	2.507	0.161	0.148	0.010	852.463	0.060	-
2012_Rub-trd Gantry Crane_Diesel_685_20	0.559	1.237	5.027	0.169	0.155	0.009	862.808	0.063	-
2012_Rub-trd Gantry Crane_Diesel_685_19	0.538	1.230	7.602	0.228	0.210	0.009	846.468	0.073	-
2012_Rub-trd Gantry Crane_Diesel_612_20	0.701	1.351	5.694	0.202	0.186	0.008	834.560	0.065	-
2012_Rub-trd Gantry Crane_Diesel_454_20	0.451	1.158	4.787	0.149	0.137	0.008	852.430	0.066	-
2012_Rub-trd Gantry Crane_Diesel_197_20	0.106	0.960	1.317	0.009	0.008	0.010	852.461	0.020	-
2012_Top handler_Diesel_250_2002	0.650	1.408	8.685	0.248	0.228	0.010	852.137	0.081	-
2012_Top handler_Diesel_260_2007	0.397	1.189	2.657	0.137	0.126	0.008	851.715	0.048	-
2012_Top handler_Diesel_260_2008	0.437	1.226	2.702	0.144	0.132	0.008	849.650	0.043	-
2012_Top handler_Diesel_260_2006	0.433	1.215	4.880	0.144	0.133	0.008	851.683	0.054	-
2012_Top handler_Diesel_335_2011	0.131	0.974	1.339	0.009	0.009	0.008	851.552	0.019	-
2012_Yard tractor_LPG_174_2000	1.536	20.278	10.966	0.060	0.060	-	674.859	0.244	-
2012_Yard tractor_LPG_195_2004	1.192	27.841	5.446	0.060	0.060	-	674.859	0.171	-
2012_Yard tractor_LPG_195_2007	1.204	25.324	4.252	0.060	0.060	-	674.859	0.050	-
2012_Yard tractor_LPG_195_2008	0.521	2.514	1.179	0.060	0.060	-	674.859	0.045	-
2012_Yard tractor_LPG_231_2011	0.063	8.265	0.398	0.060	0.060	-	674.859	0.027	-
2012_Sweeper_Diesel_100_1995	1.042	3.490	8.138	0.497	0.457	0.010	852.394	0.251	-
2012_Sweeper_Diesel_100_2005	0.587	3.930	5.704	0.393	0.361	0.010	852.479	0.092	-
2012_Truck_Diesel_250_2005	0.261	1.050	4.473	0.113	0.104	0.010	852.099	0.061	-
2012_Truck_Diesel_250_2008	0.264	1.066	2.504	0.115	0.106	0.010	851.926	0.043	-
2012_Truck_Diesel_275_1993	0.716	2.700	7.598	0.274	0.252	0.008	834.926	0.154	-
2012_Truck_Diesel_275_2001	0.403	1.022	6.504	0.147	0.135	0.008	849.903	0.069	-

Table B1-57. 2012 Proposed Mitigated Scenario Annual Mass Emissions

		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2012_Electric Wharf Crane_		-	-	-	-	-	-	-	-	-	-
2012_Forklift_LPG	14,411	0.01	0.29	0.03	0.00	0.00	-	11	0.00	-	-
2012_Forklift_LPG	10,845	0.00	0.03	0.01	0.00	0.00	-	8	0.00	-	-
2012_Forklift_LPG	3,322	0.00	0.01	0.00	0.00	0.00	-	2	0.00	-	-
2012_Forklift_LPG	378	0.00	0.01	0.00	0.00	0.00	-	0	0.00	-	-
2012_Forklift_LPG	20,025	0.03	0.45	0.20	0.00	0.00	-	15	0.00	-	-
2012_Forklift_Diesel	5,151	0.00	0.02	0.05	0.00	0.00	0.00	5	0.00	-	0.00
2012_Forklift_Diesel	38,983	0.03	0.16	0.24	0.01	0.01	0.00	37	0.00	-	0.01
2012_Forklift_Diesel	45,828	0.02	0.17	0.24	0.01	0.01	0.00	43	0.00	-	0.01
2012_Forklift_Diesel	3,667	0.01	0.02	0.05	0.00	0.00	0.00	3	0.00	-	0.00
2012_Forklift_Diesel	-	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	4,648	0.00	0.01	0.01	0.00	0.00	0.00	4	0.00	-	0.00
2012_Forklift_Diesel	25,466	0.01	0.03	0.14	0.00	0.00	0.00	24	0.00	-	0.00
2012_Forklift_Diesel	41,117	0.01	0.14	0.11	0.01	0.01	0.00	39	0.00	-	0.01
2012_Rub-trd Gantry Crane_Diesel	687,028	0.42	0.94	3.81	0.13	0.12	0.01	653	0.05	-	0.13
2012_Rub-trd Gantry Crane_Diesel	168,567	0.10	0.23	1.41	0.04	0.04	0.00	157	0.01	-	0.04
2012_Rub-trd Gantry Crane_Diesel	1,086,487	0.84	1.62	6.82	0.24	0.22	0.01	999	0.08	-	0.24
2012_Rub-trd Gantry Crane_Diesel	134,316	0.07	0.17	0.71	0.02	0.02	0.00	126	0.01	-	0.02
2012_Rub-trd Gantry Crane_Diesel	16,641	0.00	0.02	0.02	0.00	0.00	0.00	16	0.00	-	0.00
2012_Top handler_Diesel	1,034,806	0.22	0.48	9.91	0.20	0.18	0.01	972	0.09	-	0.20
2012_Top handler_Diesel	756,391	0.10	0.30	2.22	0.08	0.07	0.01	710	0.04	-	0.08
2012_Top handler_Diesel	2,872,020	1.38	3.88	8.55	0.46	0.42	0.03	2,690	0.14	-	0.46
2012_Top handler_Diesel	787,068	0.11	0.32	4.23	0.09	0.08	0.01	739	0.05	-	0.09
2012_Top handler_Diesel	416,786	0.06	0.45	0.62	0.00	0.00	0.00	391	0.01	-	0.00
2012_Yard tractor_LPG	23,343	0.04	0.52	0.28	0.00	0.00	-	17	0.01	-	-
2012_Yard tractor_LPG	2,822,527	3.71	86.62	16.94	0.19	0.19	-	2,100	0.53	-	-
2012_Yard tractor_LPG	3,835,117	5.09	107.06	17.97	0.25	0.25	-	2,853	0.21	-	-
2012_Yard tractor_LPG	3,068,651	1.76	8.50	3.99	0.20	0.20	-	2,283	0.15	-	-
2012_Yard tractor_LPG	1,109,814	0.08	10.11	0.49	0.07	0.07	-	826	0.03	-	-
2012_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-	-
2012_Sweeper_Diesel	41,038	0.03	0.18	0.26	0.02	0.02	0.00	39	0.00	-	0.02
2012_Truck_Diesel	86,484	0.02	0.10	0.43	0.01	0.01	0.00	81	0.01	-	0.01
2012_Truck_Diesel	138,907	0.04	0.16	0.38	0.02	0.02	0.00	130	0.01	-	0.02
2012_Truck_Diesel	-	-	-	-	-	-	-	-	-	-	-
2012_Truck_Diesel	25,050	0.01	0.03	0.18	0.00	0.00	0.00	23	0.00	-	0.00

Table B1-58. 2012 Proposed Mitigated Scenario Peak Day Emissions

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2012_Electric Wharf Crane_	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Forklift_LPG	0.0040	0.05	2.33	0.27	0.01	0.01	-	86	0.02	-	-
2012_Forklift_LPG	0.0040	0.02	0.23	0.10	0.01	0.01	-	64	0.00	-	-
2012_Forklift_LPG	0.0040	0.00	0.09	0.01	0.00	0.00	-	20	0.00	-	-
2012_Forklift_LPG	0.0040	0.00	0.06	0.04	0.00	0.00	-	2	0.00	-	-
2012_Forklift_LPG	0.0040	0.23	3.57	1.57	0.01	0.01	-	119	0.03	-	-
2012_Forklift_Diesel	0.0040	0.04	0	0.38	0.02	0.01	0.00	39	0.01	-	0.02
2012_Forklift_Diesel	0.0040	0.22	1.30	1.91	0.11	0.10	0.00	292.56	0.03	-	0.11
2012_Forklift_Diesel	0.0040	0.15	1.32	1.89	0.08	0.08	0.00	343.93	0.03	-	0.08
2012_Forklift_Diesel	0.0040	0.04	0.16	0.40	0.02	0.02	0.00	27.43	0.01	-	0.02
2012_Forklift_Diesel	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	0.0040	0.01	0.11	0.10	0.00	0.00	0.00	34.88	0.00	-	0.00
2012_Forklift_Diesel	0.0040	0.08	0.25	1.09	0.03	0.03	0.00	191.12	0.02	-	0.03
2012_Forklift_Diesel	0.0040	0.10	1.13	0.91	0.06	0.05	0.00	308.58	0.02	-	0.06
2012_Rub-trd Gantry Crane_Diesel	0.0040	3.38	7.48	30.40	1.02	0.94	0.05	5,218.58	0.38	-	1.02
2012_Rub-trd Gantry Crane_Diesel	0.0040	0.80	1.82	11.28	0.34	0.31	0.01	1,256.17	0.11	-	0.34
2012_Rub-trd Gantry Crane_Diesel	0.0040	6.71	12.92	54.47	1.93	1.78	0.08	7,982.63	0.62	-	1.93
2012_Rub-trd Gantry Crane_Diesel	0.0040	0.53	1.37	5.66	0.18	0.16	0.01	1,007.98	0.08	-	0.18
2012_Rub-trd Gantry Crane_Diesel	0.0040	0.02	0.14	0.19	0.00	0.00	0.00	124.88	0.00	-	0.00
2012_Top handler_Diesel	0.0040	1.78	3.85	79.12	1.58	1.45	0.09	7,763.05	0.74	-	1.58
2012_Top handler_Diesel	0.0040	0.79	2.38	17.69	0.64	0.59	0.06	5,671.59	0.32	-	0.64
2012_Top handler_Diesel	0.0040	11.04	31.00	68.32	3.64	3.35	0.21	21,482.86	1.09	-	3.64
2012_Top handler_Diesel	0.0040	0.90	2.52	33.81	0.70	0.64	0.06	5,901.39	0.37	-	0.70
2012_Top handler_Diesel	0.0040	0.48	3.57	4.91	0.03	0.03	0.03	3,124.56	0.07	-	0.03
2012_Yard tractor_LPG	0.0040	0.32	4.17	2.25	0.01	0.01	-	138.69	0.05	-	-
2012_Yard tractor_LPG	0.0040	29.63	691.82	135.32	1.48	1.48	-	16,769.33	4.25	-	-
2012_Yard tractor_LPG	0.0040	40.65	855.02	143.55	2.01	2.01	-	22,785.37	1.70	-	-
2012_Yard tractor_LPG	0.0040	14.08	67.91	31.85	1.61	1.61	-	18,231.61	1.20	-	-
2012_Yard tractor_LPG	0.0040	0.62	80.75	3.89	0.58	0.58	-	6,593.68	0.26	-	-
2012_Sweeper_Diesel	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Sweeper_Diesel	0.0040	0.21	1.42	2.06	0.14	0.13	0.00	307.99	0.03	-	0.14
2012_Truck_Diesel	0.0040	0.20	0.80	3.41	0.09	0.08	0.01	648.77	0.05	-	0.09
2012_Truck_Diesel	0.0040	0.32	1.30	3.06	0.14	0.13	0.01	1,041.81	0.05	-	0.14
2012_Truck_Diesel	0.0040	-	-	-	-	-	-	-	-	-	-
2012_Truck_Diesel	0.0040	0.09	0.23	1.43	0.03	0.03	0.00	187.43	0.02	-	0.03

8hr/24hr Peaking Factor*: 0.491679278

**Note: Using same peaking factor that is applied to trucks*

Table B1-59. 2012 Proposed Mitigated Scenario Eight Hour Peak Emissions

	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2012_Electric Wharf Crane_	-	-	-	-	-	-	-	-	-	-
2012_Forklift_LPG	0.02	1.15	0.13	0.00	0.00	-	42	0.01	-	-
2012_Forklift_LPG	0.01	0.11	0.05	0.00	0.00	-	32	0.00	-	-
2012_Forklift_LPG	0.00	0.04	0.00	0.00	0.00	-	10	0.00	-	-
2012_Forklift_LPG	0.00	0.03	0.02	0.00	0.00	-	1	0.00	-	-
2012_Forklift_LPG	0.11	1.76	0.77	0.01	0.01	-	58	0.01	-	-
2012_Forklift_Diesel	0.02	0	0.19	0.01	0.01	0.00	19	0.00	-	0.01
2012_Forklift_Diesel	0.11	0.64	0.94	0.05	0.05	0.00	143.84	0.01	-	0.05
2012_Forklift_Diesel	0.08	0.65	0.93	0.04	0.04	0.00	169.10	0.02	-	0.04
2012_Forklift_Diesel	0.02	0.08	0.20	0.01	0.01	0.00	13.49	0.00	-	0.01
2012_Forklift_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	0.00	0.06	0.05	0.00	0.00	0.00	17.15	0.00	-	0.00
2012_Forklift_Diesel	0.04	0.12	0.54	0.01	0.01	0.00	93.97	0.01	-	0.01
2012_Forklift_Diesel	0.05	0.56	0.45	0.03	0.03	0.00	151.72	0.01	-	0.03
2012_Rub-trd Gantry Crane_Diesel	1.66	3.68	14.95	0.50	0.46	0.03	2,565.87	0.19	-	0.50
2012_Rub-trd Gantry Crane_Diesel	0.39	0.90	5.55	0.17	0.15	0.01	617.63	0.05	-	0.17
2012_Rub-trd Gantry Crane_Diesel	3.30	6.35	26.78	0.95	0.88	0.04	3,924.89	0.30	-	0.95
2012_Rub-trd Gantry Crane_Diesel	0.26	0.67	2.78	0.09	0.08	0.00	495.60	0.04	-	0.09
2012_Rub-trd Gantry Crane_Diesel	0.01	0.07	0.09	0.00	0.00	0.00	61.40	0.00	-	0.00
2012_Top handler_Diesel	0.87	1.89	38.90	0.78	0.71	0.04	3,816.93	0.36	-	0.78
2012_Top handler_Diesel	0.39	1.17	8.70	0.31	0.29	0.03	2,788.60	0.16	-	0.31
2012_Top handler_Diesel	5.43	15.24	33.59	1.79	1.65	0.10	10,562.68	0.53	-	1.79
2012_Top handler_Diesel	0.44	1.24	16.62	0.34	0.32	0.03	2,901.59	0.18	-	0.34
2012_Top handler_Diesel	0.24	1.76	2.42	0.02	0.02	0.02	1,536.28	0.03	-	0.02
2012_Yard tractor_LPG	0.16	2.05	1.11	0.01	0.01	-	68.19	0.02	-	-
2012_Yard tractor_LPG	14.57	340.15	66.53	0.73	0.73	-	8,245.13	2.09	-	-
2012_Yard tractor_LPG	19.99	420.40	70.58	0.99	0.99	-	11,203.10	0.84	-	-
2012_Yard tractor_LPG	6.92	33.39	15.66	0.79	0.79	-	8,964.11	0.59	-	-
2012_Yard tractor_LPG	0.30	39.70	1.91	0.29	0.29	-	3,241.98	0.13	-	-
2012_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Sweeper_Diesel	0.10	0.70	1.01	0.07	0.06	0.00	151.43	0.02	-	0.07
2012_Truck_Diesel	0.10	0.39	1.67	0.04	0.04	0.00	318.99	0.02	-	0.04
2012_Truck_Diesel	0.16	0.64	1.51	0.07	0.06	0.01	512.24	0.03	-	0.07
2012_Truck_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Truck_Diesel	0.04	0.11	0.71	0.02	0.01	0.00	92.16	0.01	-	0.02

1hr/24hr Peaking Factor*: 0.070264762

**Note: Using same peaking factor that is applied to trucks*

Table B1-60. 2012 Proposed Mitigated Scenario One Hour Peak Emissions

	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2012_Electric Wharf Crane_	-	-	-	-	-	-	-	-	-	-
2012_Forklift_LPG	0.00	0.16	0.02	0.00	0.00	-	6	0.00	-	-
2012_Forklift_LPG	0.00	0.02	0.01	0.00	0.00	-	5	0.00	-	-
2012_Forklift_LPG	0.00	0.01	0.00	0.00	0.00	-	1	0.00	-	-
2012_Forklift_LPG	0.00	0.00	0.00	0.00	0.00	-	0	0.00	-	-
2012_Forklift_LPG	0.02	0.25	0.11	0.00	0.00	-	8	0.00	-	-
2012_Forklift_Diesel	0.00	0	0.03	0.00	0.00	0.00	3	0.00	-	0.00
2012_Forklift_Diesel	0.02	0.09	0.13	0.01	0.01	0.00	20.56	0.00	-	0.01
2012_Forklift_Diesel	0.01	0.09	0.13	0.01	0.01	0.00	24.17	0.00	-	0.01
2012_Forklift_Diesel	0.00	0.01	0.03	0.00	0.00	0.00	1.93	0.00	-	0.00
2012_Forklift_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Forklift_Diesel	0.00	0.01	0.01	0.00	0.00	0.00	2.45	0.00	-	0.00
2012_Forklift_Diesel	0.01	0.02	0.08	0.00	0.00	0.00	13.43	0.00	-	0.00
2012_Forklift_Diesel	0.01	0.08	0.06	0.00	0.00	0.00	21.68	0.00	-	0.00
2012_Rub-trd Gantry Crane_Diesel	0.24	0.53	2.14	0.07	0.07	0.00	366.68	0.03	-	0.07
2012_Rub-trd Gantry Crane_Diesel	0.06	0.13	0.79	0.02	0.02	0.00	88.26	0.01	-	0.02
2012_Rub-trd Gantry Crane_Diesel	0.47	0.91	3.83	0.14	0.13	0.01	560.90	0.04	-	0.14
2012_Rub-trd Gantry Crane_Diesel	0.04	0.10	0.40	0.01	0.01	0.00	70.83	0.01	-	0.01
2012_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.01	0.00	0.00	0.00	8.78	0.00	-	0.00
2012_Top handler_Diesel	0.12	0.27	5.56	0.11	0.10	0.01	545.47	0.05	-	0.11
2012_Top handler_Diesel	0.06	0.17	1.24	0.04	0.04	0.00	398.51	0.02	-	0.04
2012_Top handler_Diesel	0.78	2.18	4.80	0.26	0.24	0.01	1,509.49	0.08	-	0.26
2012_Top handler_Diesel	0.06	0.18	2.38	0.05	0.05	0.00	414.66	0.03	-	0.05
2012_Top handler_Diesel	0.03	0.25	0.35	0.00	0.00	0.00	219.55	0.00	-	0.00
2012_Yard tractor_LPG	0.02	0.29	0.16	0.00	0.00	-	9.74	0.00	-	-
2012_Yard tractor_LPG	2.08	48.61	9.51	0.10	0.10	-	1,178.29	0.30	-	-
2012_Yard tractor_LPG	2.86	60.08	10.09	0.14	0.14	-	1,601.01	0.12	-	-
2012_Yard tractor_LPG	0.99	4.77	2.24	0.11	0.11	-	1,281.04	0.08	-	-
2012_Yard tractor_LPG	0.04	5.67	0.27	0.04	0.04	-	463.30	0.02	-	-
2012_Sweeper_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Sweeper_Diesel	0.01	0.10	0.14	0.01	0.01	0.00	21.64	0.00	-	0.01
2012_Truck_Diesel	0.01	0.06	0.24	0.01	0.01	0.00	45.59	0.00	-	0.01
2012_Truck_Diesel	0.02	0.09	0.22	0.01	0.01	0.00	73.20	0.00	-	0.01
2012_Truck_Diesel	-	-	-	-	-	-	-	-	-	-
2012_Truck_Diesel	0.01	0.02	0.10	0.00	0.00	0.00	13.17	0.00	-	0.00

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2014

Table B1-61. 2014 Proposed Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Electric Wharf Crane	NA	1997	Electric	na	16		0%	-	0%	0%	0%
Forklift	137	2007	D	0.3	3	DPF	67%	785	85%	93%	90%
Forklift	152	1994	D	0.3	1		0%	-	0%	0%	0%
Forklift	152	2004	D	0.3	2	DPF	50%	1,109	85%	93%	90%
Forklift	152	2005	D	0.3	3	DPF	67%	896	85%	93%	90%
Forklift	164	2009	D	0.3	1	DPF	100%	72	85%	93%	90%
Forklift	165	2014	D	0.3	1		0%	43	0%	0%	0%
Forklift	190	2004	D	0.3	2	DPF	50%	1,022	85%	93%	90%
Forklift	75	2011	LPG	0.3	1		0%	55	0%	0%	0%
Forklift	160	2005	LPG	0.3	3		0%	597	0%	0%	0%
Forklift	160	2008	LPG	0.3	2		0%	232	0%	0%	0%
Forklift	165	1995	LPG	0.3	1		0%	1	0%	0%	0%
Forklift	165	2002	LPG	0.3	2		0%	627	0%	0%	0%
Rub-trd Gantry Crane	197	2011	D	0.2	1		0%	1,636	0%	0%	0%
Rub-trd Gantry Crane	454	2004	D	0.2	2	Rypos,ULSD	100%	2,701	50%	78%	98%
Rub-trd Gantry Crane	600	2013	D	0.2	1		0%	1,629	0%	0%	0%
Rub-trd Gantry Crane	612	2003	D	0.2	8	Rypos,ULSD	100%	15,784	50%	78%	98%
Rub-trd Gantry Crane	685	1999	D	0.2	1	Rypos,ULSD	100%	1,306	50%	78%	98%
Rub-trd Gantry Crane	685	2005	D	0.2	5	Rypos,ULSD	100%	10,707	50%	78%	98%
Sweeper	100	1995	D	0.68	1		0%	-	0%	0%	0%
Top handler	250	2002	D	0.59	8	DPF	100%	11,823	85%	93%	90%
Top handler	260	2006	D	0.59	6	DPF	100%	9,613	85%	93%	90%
Top handler	260	2007	D	0.59	6	DPF	100%	8,789	85%	93%	90%
Top handler	260	2008	D	0.59	15	DPF	100%	32,431	85%	93%	90%
Top handler	335	2011	D	0.59	3		0%	4,262	0%	0%	0%
Top handler	370	2014	D	0.59	1		0%	971	0%	0%	0%
Truck	250	2005	D	0.51	2	DPF	100%	1,161	85%	93%	90%
Truck	250	2008	D	0.51	2		0%	1,676	0%	0%	0%
Truck	275	2001	D	0.51	1	DPF	100%	650	85%	93%	90%
Yard tractor	174	2000	LPG	0.39	2		0%	449	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	63,798	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	88,949	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	67,604	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	23		0%	17,903	0%	0%	0%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-62. 2014 Proposed Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**
2014_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-
2014_Forklift_D	0.324	3.293	2.574	0.178	0.164	0.010	852.449	0.065	-
2014_Forklift_D	0.716	2.700	7.598	0.274	0.252	0.010	852.546	0.172	-
2014_Forklift_D	0.497	3.385	5.158	0.256	0.235	0.010	852.432	0.087	-
2014_Forklift_D	0.301	3.049	4.509	0.174	0.160	0.010	852.444	0.076	-
2014_Forklift_D	0.122	2.746	2.342	0.117	0.108	0.010	852.442	0.060	-
2014_Forklift_D	0.096	2.705	2.154	0.009	0.008	0.010	852.471	0.021	-
2014_Forklift_D	0.520	1.294	5.395	0.162	0.149	0.010	852.443	0.068	-
2014_Forklift_LPG	0.034	3.215	0.325	0.060	0.060	-	674.859	0.057	-
2014_Forklift_LPG	0.561	19.972	2.637	0.060	0.060	-	674.859	0.188	-
2014_Forklift_LPG	0.193	2.404	1.069	0.060	0.060	-	674.859	0.056	-
2014_Forklift_LPG	1.373	16.490	10.509	0.060	0.060	-	674.859	0.220	-
2014_Forklift_LPG	1.394	21.981	9.101	0.060	0.060	-	674.859	0.184	-
2014_Rub-trd Gantry Crane_D	0.260	1.155	1.451	0.012	0.011	0.010	852.537	0.029	-
2014_Rub-trd Gantry Crane_D	0.672	1.320	5.277	0.190	0.175	0.008	852.157	0.066	-
2014_Rub-trd Gantry Crane_D	0.166	1.008	1.370	0.010	0.009	0.009	850.134	0.020	-
2014_Rub-trd Gantry Crane_D	0.992	1.577	6.439	0.262	0.241	0.008	831.894	0.065	-
2014_Rub-trd Gantry Crane_D	0.701	1.481	8.966	0.316	0.291	0.009	856.602	0.074	-
2014_Rub-trd Gantry Crane_D	0.918	1.500	5.823	0.236	0.217	0.009	858.518	0.066	-
2014_Sweeper_D	1.042	3.490	8.138	0.497	0.457	0.010	852.394	0.251	-
2014_Top handler_D	0.782	1.614	9.850	0.302	0.278	0.010	852.043	0.081	-
2014_Top handler_D	0.672	1.445	5.448	0.188	0.173	0.008	853.218	0.065	-
2014_Top handler_D	0.602	1.378	2.891	0.172	0.158	0.008	854.160	0.059	-
2014_Top handler_D	0.696	1.465	2.999	0.188	0.173	0.008	854.079	0.054	-
2014_Top handler_D	0.236	1.073	1.430	0.011	0.010	0.008	854.065	0.027	-
2014_Top handler_D	0.070	0.946	0.261	0.009	0.008	0.008	850.994	0.011	-
2014_Truck_D	0.343	1.128	4.667	0.128	0.117	0.010	852.537	0.066	-
2014_Truck_D	0.358	1.153	2.612	0.131	0.120	0.010	852.522	0.065	-
2014_Truck_D	0.546	1.247	7.772	0.206	0.189	0.008	852.351	0.069	-
2014_Yard tractor_LPG	1.557	20.773	11.026	0.060	0.060	-	674.859	0.220	-
2014_Yard tractor_LPG	1.498	34.964	5.998	0.060	0.060	-	674.859	0.206	-
2014_Yard tractor_LPG	2.035	32.242	6.339	0.060	0.060	-	674.859	0.062	-
2014_Yard tractor_LPG	0.837	2.620	1.285	0.060	0.060	-	674.859	0.056	-
2014_Yard tractor_LPG	0.119	17.961	0.537	0.060	0.060	-	674.859	0.039	-

Note: Emission factors for diesel equiment from California ARB CHE Inventory Tool

Propane equipment emission factors for NOX and HC are from LSI Rule. EFs for remaining pollutants are based on CNG forklift emission rates from Offroad2007.

Table B1-63. 2014 Proposed Mitigated Scenario Annual Mass Emissions

2014		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2014_Electric Wharf Crane_Electric		-	-	-	-	-	-	-	-	-	-
2014_Forklift_D	32,248	0.00	0.05	0.09	0.00	0.00	0.00	30	0.00	-	0.00
2014_Forklift_D	-	-	-	-	-	-	-	-	-	-	-
2014_Forklift_D	50,578	0.01	0.10	0.29	0.01	0.01	0.00	48	0.00	-	0.01
2014_Forklift_D	40,845	0.01	0.05	0.20	0.00	0.00	0.00	38	0.00	-	0.00
2014_Forklift_D	3,567	0.00	0.00	0.01	0.00	0.00	0.00	3	0.00	-	0.00
2014_Forklift_D	2,147	0.00	0	0.01	0.00	0.00	0.00	2	0.00	-	0.00
2014_Forklift_D	58,279	0.02	0.05	0.35	0.01	0.01	0.00	54.76	0.00	-	0.01
2014_Forklift_LPG	1,235	0.00	0.00	0.00	0.00	0.00	-	0.92	0.00	-	-
2014_Forklift_LPG	28,653	0.02	0.63	0.08	0.00	0.00	-	21.31	0.01	-	-
2014_Forklift_LPG	11,155	0.00	0.03	0.01	0.00	0.00	-	8.30	0.00	-	-
2014_Forklift_LPG	34	0.00	0.00	0.00	0.00	0.00	-	0.02	0.00	-	-
2014_Forklift_LPG	31,024	0.05	0.75	0.31	0.00	0.00	-	23.08	0.01	-	-
2014_Rub-trd Gantry Crane_D	64,444	0.02	0.08	0.10	0.00	0.00	0.00	60.56	0.00	-	0.00
2014_Rub-trd Gantry Crane_D	245,228	0.04	0.01	1.43	0.03	0.02	0.00	230.35	0.02	-	0.03
2014_Rub-trd Gantry Crane_D	195,462	0.04	0.22	0.30	0.00	0.00	0.00	183.17	0.00	-	0.00
2014_Rub-trd Gantry Crane_D	1,932,013	0.46	0.07	13.71	0.28	0.26	0.02	1,771.64	0.14	-	0.28
2014_Rub-trd Gantry Crane_D	178,968	0.03	0.01	1.77	0.03	0.03	0.00	168.99	0.01	-	0.03
2014_Rub-trd Gantry Crane_D	1,466,830	0.33	0.05	9.41	0.19	0.18	0.01	1,388.12	0.11	-	0.19
2014_Sweeper_D	-	-	-	-	-	-	-	-	-	-	-
2014_Top handler_D	1,743,853	0.11	0.31	18.93	0.09	0.08	0.02	1,637.83	0.16	-	0.09
2014_Top handler_D	1,474,562	0.08	0.23	8.86	0.05	0.04	0.01	1,386.82	0.11	-	0.05
2014_Top handler_D	1,348,174	0.06	0.20	4.30	0.04	0.04	0.01	1,269.35	0.09	-	0.04
2014_Top handler_D	4,974,868	0.27	0.80	16.45	0.15	0.14	0.05	4,683.57	0.30	-	0.15
2014_Top handler_D	842,354	0.22	1.00	1.33	0.01	0.01	0.01	793.02	0.03	-	0.01
2014_Top handler_D	211,957	0.02	0.22	0.06	0.00	0.00	0.00	198.82	0.00	-	0.00
2014_Truck_D	148,070	0.00	0.02	0.76	0.00	0.00	0.00	139.15	0.01	-	0.00
2014_Truck_D	213,726	0.08	0.27	0.62	0.03	0.03	0.00	200.84	0.02	-	0.03
2014_Truck_D	91,227	0.00	0.01	0.78	0.00	0.00	0.00	85.71	0.01	-	0.00
2014_Yard tractor_LPG	30,438	0.05	0.70	0.37	0.00	0.00	-	22.64	0.01	-	-
2014_Yard tractor_LPG	4,851,860	8.01	186.99	32.08	0.32	0.32	-	3,609.26	1.10	-	-
2014_Yard tractor_LPG	6,764,593	15.17	240.41	47.27	0.44	0.44	-	5,032.13	0.46	-	-
2014_Yard tractor_LPG	5,141,295	4.75	14.85	7.28	0.34	0.34	-	3,824.57	0.32	-	-
2014_Yard tractor_LPG	1,612,894	0.21	31.93	0.95	0.11	0.11	-	1,199.82	0.07	-	-

Table B1-64. 2014 Proposed Mitigated Scenario Peak Day Emissions

2014

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2014_Electric Wharf Crane_Electric	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Forklift_D	0.0042	0.04	0.39	0.76	0.02	0.02	0.00	252	0.02	-	0.02
2014_Forklift_D	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Forklift_D	0.0042	0.12	0.86	2.39	0.07	0.06	0.00	395	0.04	-	0.07
2014_Forklift_D	0.0042	0.04	0.46	1.69	0.03	0.03	0.00	319	0.03	-	0.03
2014_Forklift_D	0.0042	0.00	0.01	0.08	0.00	0.00	0.00	28	0.00	-	0.00
2014_Forklift_D	0.0042	0.00	0	0.04	0.00	0.00	0.00	17	0.00	-	0.00
2014_Forklift_D	0.0042	0.15	0.38	2.88	0.05	0.05	0.01	455.39	0.04	-	0.05
2014_Forklift_LPG	0.0042	0.00	0.04	0.00	0.00	0.00	-	7.64	0.00	-	-
2014_Forklift_LPG	0.0042	0.15	5.25	0.69	0.02	0.02	-	177.25	0.05	-	-
2014_Forklift_LPG	0.0042	0.02	0.25	0.11	0.01	0.01	-	69.01	0.01	-	-
2014_Forklift_LPG	0.0042	0.00	0.01	0.00	0.00	0.00	-	0.21	0.00	-	-
2014_Forklift_LPG	0.0042	0.40	6.25	2.59	0.02	0.02	-	191.92	0.05	-	-
2014_Rub-trd Gantry Crane_D	0.0042	0.15	0.68	0.86	0.01	0.01	0.01	503.62	0.02	-	0.01
2014_Rub-trd Gantry Crane_D	0.0042	0.33	0.06	11.86	0.21	0.20	0.02	1,915.58	0.15	-	0.21
2014_Rub-trd Gantry Crane_D	0.0042	0.30	1.81	2.45	0.02	0.02	0.02	1,523.21	0.04	-	0.02
2014_Rub-trd Gantry Crane_D	0.0042	3.86	0.56	114.04	2.32	2.14	0.15	14,732.91	1.14	-	2.32
2014_Rub-trd Gantry Crane_D	0.0042	0.25	0.05	14.71	0.26	0.24	0.01	1,405.29	0.12	-	0.26
2014_Rub-trd Gantry Crane_D	0.0042	2.72	0.40	78.29	1.58	1.46	0.12	11,543.57	0.89	-	1.58
2014_Sweeper_D	0.0042	-	-	-	-	-	-	-	-	-	-
2014_Top handler_D	0.0042	0.87	2.58	157.45	0.72	0.67	0.15	13,620.16	1.29	-	0.72
2014_Top handler_D	0.0042	0.64	1.95	73.64	0.38	0.35	0.11	11,532.78	0.87	-	0.38
2014_Top handler_D	0.0042	0.52	1.70	35.73	0.32	0.29	0.10	10,555.92	0.73	-	0.32
2014_Top handler_D	0.0042	2.22	6.68	136.77	1.28	1.18	0.38	38,948.49	2.46	-	1.28
2014_Top handler_D	0.0042	1.82	8.28	11.04	0.09	0.08	0.06	6,594.72	0.21	-	0.09
2014_Top handler_D	0.0042	0.14	1.84	0.51	0.02	0.02	0.02	1,653.42	0.02	-	0.02
2014_Truck_D	0.0042	0.03	0.15	6.33	0.03	0.02	0.01	1,157.16	0.09	-	0.03
2014_Truck_D	0.0042	0.70	2.26	5.12	0.26	0.24	0.02	1,670.22	0.13	-	0.26
2014_Truck_D	0.0042	0.03	0.10	6.50	0.03	0.02	0.01	712.77	0.06	-	0.03
2014_Yard tractor_LPG	0.0042	0.43	5.80	3.08	0.02	0.02	-	188.30	0.06	-	-
2014_Yard tractor_LPG	0.0042	66.62	1,555.04	266.78	2.65	2.65	-	30,014.59	9.15	-	-
2014_Yard tractor_LPG	0.0042	126.16	1,999.25	393.06	3.70	3.70	-	41,847.14	3.86	-	-
2014_Yard tractor_LPG	0.0042	39.47	123.46	60.55	2.81	2.81	-	31,805.09	2.66	-	-
2014_Yard tractor_LPG	0.0042	1.75	265.55	7.93	0.88	0.88	-	9,977.69	0.57	-	-

8hr/24hr Peaking Factor*: 0.489622946

**Note: Using same peaking factor that is applied to trucks*

Table B1-65. 2014 Proposed Mitigated Scenario Eight Hour Peak Emissions

2014	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2014_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Forklift_D	0.02	0.19	0.37	0.01	0.01	0.00	123	0.01	-	0.01
2014_Forklift_D	-	-	-	-	-	-	-	-	-	-
2014_Forklift_D	0.06	0.42	1.17	0.03	0.03	0.00	194	0.02	-	0.03
2014_Forklift_D	0.02	0.22	0.83	0.01	0.01	0.00	156	0.01	-	0.01
2014_Forklift_D	0.00	0.00	0.04	0.00	0.00	0.00	14	0.00	-	0.00
2014_Forklift_D	0.00	0.03	0.02	0.00	0.00	0.00	8	0.00	-	0.00
2014_Forklift_D	0.073	0.186	1.411	0.024	0.022	0.003	223	0.018	-	0.02
2014_Forklift_LPG	0.000	0.018	0.002	0.000	0.000	-	4	0.000	-	-
2014_Forklift_LPG	0.072	2.568	0.339	0.008	0.008	-	87	0.024	-	-
2014_Forklift_LPG	0.010	0.120	0.054	0.003	0.003	-	34	0.003	-	-
2014_Forklift_LPG	0.000	0.002	0.002	0.000	0.000	-	0	0.000	-	-
2014_Forklift_LPG	0.194	3.061	1.267	0.008	0.008	-	94	0.026	-	-
2014_Rub-trd Gantry Crane_D	0.075	0.334	0.420	0.003	0.003	0.003	247	0.008	-	0.00
2014_Rub-trd Gantry Crane_D	0.163	0.029	5.808	0.104	0.096	0.009	938	0.072	-	0.10
2014_Rub-trd Gantry Crane_D	0.146	0.884	1.202	0.009	0.008	0.007	746	0.018	-	0.01
2014_Rub-trd Gantry Crane_D	1.892	0.274	55.837	1.137	1.046	0.073	7,214	0.560	-	1.14
2014_Rub-trd Gantry Crane_D	0.124	0.024	7.202	0.127	0.117	0.007	688	0.060	-	0.13
2014_Rub-trd Gantry Crane_D	1.330	0.198	38.332	0.776	0.714	0.057	5,652	0.435	-	0.78
2014_Sweeper_D	-	-	-	-	-	-	-	-	-	-
2014_Top handler_D	0.428	1.263	77.091	0.354	0.326	0.075	6,669	0.634	-	0.35
2014_Top handler_D	0.311	0.956	36.058	0.187	0.172	0.055	5,647	0.428	-	0.19
2014_Top handler_D	0.255	0.834	17.494	0.156	0.143	0.051	5,168	0.359	-	0.16
2014_Top handler_D	1.088	3.272	66.966	0.628	0.578	0.187	19,070	1.204	-	0.63
2014_Top handler_D	0.891	4.056	5.407	0.042	0.039	0.032	3,229	0.103	-	0.04
2014_Top handler_D	0.067	0.900	0.248	0.009	0.008	0.008	810	0.010	-	0.01
2014_Truck_D	0.016	0.075	3.101	0.013	0.012	0.006	567	0.044	-	0.01
2014_Truck_D	0.344	1.106	2.506	0.125	0.115	0.009	818	0.062	-	0.13
2014_Truck_D	0.016	0.051	3.182	0.013	0.012	0.003	349	0.028	-	0.01
2014_Yard tractor_LPG	0.213	2.838	1.506	0.008	0.008	-	92	0.030	-	-
2014_Yard tractor_LPG	32.619	761.384	130.622	1.299	1.299	-	14,696	4.479	-	-
2014_Yard tractor_LPG	61.773	978.881	192.451	1.811	1.811	-	20,489	1.890	-	-
2014_Yard tractor_LPG	19.324	60.447	29.646	1.377	1.377	-	15,573	1.301	-	-
2014_Yard tractor_LPG	0.858	130.021	3.884	0.432	0.432	-	4,885	0.280	-	-

1hr/24hr Peaking Factor*: 0.070410261

**Note: Using same peaking factor that is applied to trucks*

Table B1-66. 2014 Proposed Mitigated Scenario One Hour Peak Emissions

2014	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2014	-	-	-	-	-	-	-	-	-	-
General name	0.00	0.03	0.05	0.00	0.00	0.00	18	0.00	-	0.00
2014_Electric Wharf Crane_Electric	-	-	-	-	-	-	-	-	-	-
2014_Forklift_D	0.01	0.06	0.17	0.00	0.00	0.00	28	0.00	-	0.00
2014_Forklift_D	0.00	0.03	0.12	0.00	0.00	0.00	22	0.00	-	0.00
2014_Forklift_D	0.00	0.00	0.01	0.00	0.00	0.00	2	0.00	-	0.00
2014_Forklift_D	0.00	0.00	0.00	0.00	0.00	0.00	1	0.00	-	0.00
2014_Forklift_D	0.010	0.027	0.203	0.004	0.003	0.000	32	0.003	-	0.00
2014_Forklift_D	0.000	0.003	0.000	0.000	0.000	-	1	0.000	-	-
2014_Forklift_D	0.010	0.369	0.049	0.001	0.001	-	12	0.003	-	-
2014_Forklift_LPG	0.001	0.017	0.008	0.000	0.000	-	5	0.000	-	-
2014_Forklift_LPG	0.000	0.000	0.000	0.000	0.000	-	0	0.000	-	-
2014_Forklift_LPG	0.028	0.440	0.182	0.001	0.001	-	14	0.004	-	-
2014_Forklift_LPG	0.011	0.048	0.060	0.000	0.000	0.000	35	0.001	-	0.00
2014_Forklift_LPG	0.023	0.004	0.835	0.015	0.014	0.001	135	0.010	-	0.02
2014_Rub-trd Gantry Crane_D	0.021	0.127	0.173	0.001	0.001	0.001	107	0.003	-	0.00
2014_Rub-trd Gantry Crane_D	0.272	0.039	8.030	0.163	0.150	0.010	1,037	0.081	-	0.16
2014_Rub-trd Gantry Crane_D	0.018	0.003	1.036	0.018	0.017	0.001	99	0.009	-	0.02
2014_Rub-trd Gantry Crane_D	0.191	0.028	5.512	0.112	0.103	0.008	813	0.063	-	0.11
2014_Rub-trd Gantry Crane_D	-	-	-	-	-	-	-	-	-	-
2014_Rub-trd Gantry Crane_D	0.062	0.182	11.086	0.051	0.047	0.011	959	0.091	-	0.05
2014_Sweeper_D	0.045	0.138	5.185	0.027	0.025	0.008	812	0.061	-	0.03
2014_Top handler_D	0.037	0.120	2.516	0.022	0.021	0.007	743	0.052	-	0.02
2014_Top handler_D	0.156	0.471	9.630	0.090	0.083	0.027	2,742	0.173	-	0.09
2014_Top handler_D	0.128	0.583	0.778	0.006	0.006	0.005	464	0.015	-	0.01
2014_Top handler_D	0.010	0.129	0.036	0.001	0.001	0.001	116	0.001	-	0.00
2014_Top handler_D	0.002	0.011	0.446	0.002	0.002	0.001	81	0.006	-	0.00
2014_Top handler_D	0.049	0.159	0.360	0.018	0.017	0.001	118	0.009	-	0.02
2014_Truck_D	0.002	0.007	0.458	0.002	0.002	0.000	50	0.004	-	0.00
2014_Truck_D	0.031	0.408	0.217	0.001	0.001	-	13	0.004	-	-
2014_Truck_D	4.691	109.491	18.784	0.187	0.187	-	2,113	0.644	-	-
2014_Yard tractor_LPG	8.883	140.768	27.675	0.260	0.260	-	2,946	0.272	-	-
2014_Yard tractor_LPG	2.779	8.693	4.263	0.198	0.198	-	2,239	0.187	-	-
2014_Yard tractor_LPG	0.123	18.698	0.559	0.062	0.062	-	703	0.040	-	-

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2018

Table B1-67. 2018 Proposed Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2007	Diesel	0.3	1	DPF	100%	279	85%	0%	0%
Forklift	152	2004	Diesel	0.3	1	DPF	100%	808	85%	0%	0%
Forklift	152	2005	Diesel	0.3	2	DPF	100%	1,888	85%	0%	0%
Forklift	190	2004	Diesel	0.3	1	DPF	100%	880	85%	0%	0%
Forklift	160	2005	LPG	0.3	2		0%	747	0%	0%	0%
Forklift	160	2008	LPG	0.3	2		0%	187	0%	0%	0%
Forklift	165	2002	LPG	0.3	2		0%	355	0%	0%	0%
Forklift	165	2011	LPG	0.3	1		0%	309	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.20	1		0%	969	0%	0%	0%
Rub-trd Gantry Crane	302	2015	Diesel	0.20	5		0%	8,494	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.20	2	Rypos,ULSD	100%	3,791	50%	78%	98%
Rub-trd Gantry Crane	612	2003	Diesel	0.20	8	Rypos,ULSD	100%	8,506	50%	78%	98%
Rub-trd Gantry Crane	685	2005	Diesel	0.20	5	Rypos,ULSD	100%	7,575	50%	78%	98%
Top handler	250	2002	Diesel	0.59	8	DPF	100%	8,058	85%	0%	0%
Top handler	260	2006	Diesel	0.59	5	DPF	100%	5,435	85%	0%	0%
Top handler	260	2007	Diesel	0.59	6	DPF	100%	6,045	85%	0%	0%
Top handler	260	2008	Diesel	0.59	15	DPF	100%	30,362	85%	0%	0%
Top handler	335	2011	Diesel	0.59	3		0%	3,830	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1		0%	1,092	0%	0%	0%
Yard tractor	195	2004	LPG	0.39	53		0%	43,664	0%	0%	0%
Yard tractor	195	2007	LPG	0.39	59		0%	72,374	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	55,530	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	23		0%	22,528	0%	0%	0%
Sweeper	100	2005	Diesel	0.68	1		0%	845	0%	0%	0%
Truck	250	2005	Diesel	0.51	2	DPF	100%	1,222	85%	0%	0%
Truck	250	2008	Diesel	0.51	2		0%	1,764	0%	0%	0%
Truck	275	2001	Diesel	0.51	1	DPF	100%	684	85%	0%	0%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-68. 2018 Proposed Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2018_Forklift_Diesel_137_2007	0.229	3.035	2.465	0.150	0.138	0.010	852.447	0.065	-
2018_Forklift_Diesel_152_2004	0.702	3.913	5.686	0.336	0.309	0.010	852.340	0.087	-
2018_Forklift_Diesel_152_2005	0.672	4.030	5.350	0.304	0.280	0.010	852.376	0.076	-
2018_Forklift_Diesel_190_2004	0.596	1.370	5.612	0.177	0.163	0.010	852.538	0.068	-
2018_Forklift_LPG_160_2005	0.913	22.904	3.521	0.060	0.060	-	674.859	0.257	-
2018_Forklift_LPG_160_2008	0.188	2.402	1.067	0.060	0.060	-	674.859	0.080	-
2018_Forklift_LPG_165_2002	1.472	23.796	9.288	0.060	0.060	-	674.859	0.257	-
2018_Forklift_LPG_165_2011	0.081	11.407	0.443	0.060	0.060	-	674.859	0.062	-
2018_Rub-trd Gantry Crane_Diesel_197_20	0.283	1.184	1.472	0.012	0.011	0.010	852.429	0.045	-
2018_Rub-trd Gantry Crane_Diesel_302_20	0.172	1.096	0.289	0.012	0.011	0.008	852.556	0.019	-
2018_Rub-trd Gantry Crane_Diesel_454_20	1.126	1.652	6.283	0.274	0.252	0.008	852.639	0.066	-
2018_Rub-trd Gantry Crane_Diesel_612_20	0.824	1.447	6.009	0.228	0.209	0.008	830.002	0.064	-
2018_Rub-trd Gantry Crane_Diesel_685_20	0.883	1.474	5.745	0.229	0.211	0.009	849.629	0.065	-
2018_Top handler_Diesel_250_2002	0.806	1.651	10.058	0.311	0.287	0.010	852.454	0.081	-
2018_Top handler_Diesel_260_2006	0.665	1.438	5.432	0.187	0.172	0.008	852.474	0.065	-
2018_Top handler_Diesel_260_2007	0.680	1.450	2.980	0.185	0.170	0.008	851.398	0.065	-
2018_Top handler_Diesel_260_2008	0.940	1.691	3.279	0.229	0.211	0.008	849.902	0.065	-
2018_Top handler_Diesel_335_2011	0.365	1.195	1.543	0.013	0.012	0.008	851.590	0.043	-
2018_Top handler_Diesel_370_2014	0.147	1.059	0.282	0.011	0.010	0.008	851.451	0.021	-
2018_Yard tractor_LPG_195_2004	1.476	34.457	5.959	0.060	0.060	-	674.859	0.257	-
2018_Yard tractor_LPG_195_2007	2.380	35.114	7.206	0.060	0.060	-	674.859	0.086	-
2018_Yard tractor_LPG_195_2008	1.057	2.693	1.358	0.060	0.060	-	674.859	0.080	-
2018_Yard tractor_LPG_231_2011	0.215	34.896	0.779	0.060	0.060	-	674.859	0.062	-
2018_Sweeper_Diesel_100_2005	0.805	4.523	6.271	0.514	0.473	0.010	852.462	0.103	-
2018_Truck_Diesel_250_2005	0.430	1.212	4.872	0.144	0.132	0.010	852.317	0.066	-
2018_Truck_Diesel_250_2008	0.464	1.251	2.733	0.148	0.137	0.010	852.132	0.065	-
2018_Truck_Diesel_275_2001	0.606	1.340	8.300	0.230	0.212	0.008	856.861	0.069	-

Table B1-69. 2018 Proposed Mitigated Scenario Annual Mass Emissions

		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2018_Forklift_Diesel	11,456	0.00	0.04	0.03	0.00	0.00	0.00	11	0.00	-	0.00
2018_Forklift_Diesel	36,831	0.03	0.16	0.23	0.00	0.00	0.00	35	0.00	-	0.00
2018_Forklift_Diesel	86,112	0.06	0.38	0.51	0.00	0.00	0.00	81	0.01	-	0.00
2018_Forklift_Diesel	50,183	0.03	0.08	0.31	0.00	0.00	0.00	47	0.00	-	0.00
2018_Forklift_LPG	35,861	0.04	0.91	0.14	0.00	0.00	-	27	0.01	-	-
2018_Forklift_LPG	8,965	0.00	0.02	0.01	0.00	0.00	-	7	0.00	-	-
2018_Forklift_LPG	17,573	0.03	0	0.18	0.00	0.00	-	13	0.00	-	-
2018_Forklift_LPG	15,315	0.00	0.19	0.01	0.00	0.00	-	11.39	0.00	-	-
2018_Rub-trd Gantry Crane_Diesel	38,171	0.01	0.05	0.06	0.00	0.00	0.00	35.87	0.00	-	0.00
2018_Rub-trd Gantry Crane_Diesel	513,035	0.10	0.62	0.16	0.01	0.01	0.00	482.13	0.01	-	0.01
2018_Rub-trd Gantry Crane_Diesel	344,231	0.09	0.01	2.38	0.05	0.05	0.00	323.53	0.02	-	0.05
2018_Rub-trd Gantry Crane_Diesel	1,041,144	0.21	0.03	6.90	0.13	0.12	0.01	952.55	0.07	-	0.13
2018_Rub-trd Gantry Crane_Diesel	1,037,783	0.22	0.03	6.57	0.13	0.12	0.01	971.92	0.07	-	0.13
2018_Top handler_Diesel	1,188,613	1.06	2.16	13.18	0.06	0.06	0.01	1,116.88	0.11	-	0.06
2018_Top handler_Diesel	833,728	0.61	1.32	4.99	0.03	0.02	0.01	783.43	0.06	-	0.03
2018_Top handler_Diesel	927,227	0.69	1.48	3.05	0.03	0.03	0.01	870.19	0.07	-	0.03
2018_Top handler_Diesel	4,657,569	4.83	8.68	16.83	0.18	0.16	0.04	4,363.40	0.33	-	0.18
2018_Top handler_Diesel	756,918	0.30	1.00	1.29	0.01	0.01	0.01	710.52	0.04	-	0.01
2018_Top handler_Diesel	238,412	0.04	0.28	0.07	0.00	0.00	0.00	223.76	0.01	-	0.00
2018_Yard tractor_LPG	3,320,637	5.40	126.12	21.81	0.22	0.22	-	2,470.20	0.94	-	-
2018_Yard tractor_LPG	5,504,072	14.44	213.04	43.72	0.36	0.36	-	4,094.44	0.52	-	-
2018_Yard tractor_LPG	4,223,038	4.92	12.54	6.32	0.28	0.28	-	3,141.49	0.37	-	-
2018_Yard tractor_LPG	2,029,585	0.48	78.07	1.74	0.13	0.13	-	1,509.79	0.14	-	-
2018_Sweeper_Diesel	57,492	0.05	0.29	0.40	0.03	0.03	0.00	54.02	0.01	-	0.03
2018_Truck_Diesel	155,789	0.07	0.21	0.84	0.00	0.00	0.00	146.36	0.01	-	0.00
2018_Truck_Diesel	224,867	0.11	0.31	0.68	0.04	0.03	0.00	211.22	0.02	-	0.04
2018_Truck_Diesel	95,982	0.06	0.14	0.88	0.00	0.00	0.00	90.66	0.01	-	0.00

Table B1-70. 2018 Proposed Mitigated Scenario Peak Day Emissions

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2018_Forklift_Diesel	0.0042	0.02	0.32	0.26	0.00	0.00	0.00	91	0.01	-	0.00
2018_Forklift_Diesel	0.0042	0.24	1.34	1.95	0.02	0.02	0.00	293	0.03	-	0.02
2018_Forklift_Diesel	0.0042	0.54	3.23	4.29	0.04	0.03	0.01	684	0.06	-	0.04
2018_Forklift_Diesel	0.0042	0.28	0.64	2.62	0.01	0.01	0.00	399	0.03	-	0.01
2018_Forklift_LPG	0.0042	0.31	7.65	1.18	0.02	0.02	-	226	0.09	-	-
2018_Forklift_LPG	0.0042	0.02	0.20	0.09	0.00	0.00	-	56	0.01	-	-
2018_Forklift_LPG	0.0042	0.24	4	1.52	0.01	0.01	-	111	0.04	-	-
2018_Forklift_LPG	0.0042	0.01	1.63	0.06	0.01	0.01	-	96.31	0.01	-	-
2018_Rub-trd Gantry Crane_Diesel	0.0042	0.10	0.42	0.52	0.00	0.00	0.00	303.19	0.02	-	0.00
2018_Rub-trd Gantry Crane_Diesel	0.0042	0.82	5.24	1.38	0.06	0.05	0.04	4,075.67	0.09	-	0.06
2018_Rub-trd Gantry Crane_Diesel	0.0042	0.79	0.11	20.15	0.44	0.40	0.03	2,734.92	0.21	-	0.44
2018_Rub-trd Gantry Crane_Diesel	0.0042	1.76	0.28	58.30	1.10	1.02	0.08	8,052.28	0.62	-	1.10
2018_Rub-trd Gantry Crane_Diesel	0.0042	1.88	0.29	55.55	1.11	1.02	0.08	8,216.07	0.63	-	1.11
2018_Top handler_Diesel	0.0042	8.92	18.28	111.40	0.52	0.48	0.11	9,441.47	0.90	-	0.52
2018_Top handler_Diesel	0.0042	5.17	11.17	42.20	0.22	0.20	0.07	6,622.68	0.51	-	0.22
2018_Top handler_Diesel	0.0042	5.87	12.53	25.75	0.24	0.22	0.07	7,356.09	0.56	-	0.24
2018_Top handler_Diesel	0.0042	40.81	73.38	142.30	1.49	1.37	0.36	36,885.60	2.82	-	1.49
2018_Top handler_Diesel	0.0042	2.57	8.43	10.88	0.09	0.09	0.06	6,006.31	0.30	-	0.09
2018_Top handler_Diesel	0.0042	0.33	2.35	0.63	0.02	0.02	0.02	1,891.55	0.05	-	0.02
2018_Yard tractor_LPG	0.0042	45.68	1,066.17	184.38	1.85	1.85	-	20,881.57	7.96	-	-
2018_Yard tractor_LPG	0.0042	122.04	1,800.93	369.56	3.06	3.06	-	34,611.93	4.40	-	-
2018_Yard tractor_LPG	0.0042	41.60	105.98	53.45	2.35	2.35	-	26,556.25	3.15	-	-
2018_Yard tractor_LPG	0.0042	4.07	659.96	14.74	1.13	1.13	-	12,762.89	1.18	-	-
2018_Sweeper_Diesel	0.0042	0.43	2.42	3.36	0.28	0.25	0.01	456.68	0.05	-	0.28
2018_Truck_Diesel	0.0042	0.62	1.76	7.07	0.03	0.03	0.01	1,237.28	0.10	-	0.03
2018_Truck_Diesel	0.0042	0.97	2.62	5.73	0.31	0.29	0.02	1,785.51	0.14	-	0.31
2018_Truck_Diesel	0.0042	0.54	1.20	7.42	0.03	0.03	0.01	766.35	0.06	-	0.03

8hr/24hr Peaking Factor*: 0.493093632

**Note: Using same peaking factor that is applied to trucks*

Table B1-71. 2018 Proposed Mitigated Scenario Eight Hour Peak Emissions

	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2018_Forklift_Diesel	0.01	0.16	0.13	0.00	0.00	0.00	45	0.00	-	0.00
2018_Forklift_Diesel	0.12	0.66	0.96	0.01	0.01	0.00	144	0.01	-	0.01
2018_Forklift_Diesel	0.27	1.59	2.12	0.02	0.02	0.00	337	0.03	-	0.02
2018_Forklift_Diesel	0.14	0.32	1.29	0.01	0.01	0.00	197	0.02	-	0.01
2018_Forklift_LPG	0.15	3.77	0.58	0.01	0.01	-	111	0.04	-	-
2018_Forklift_LPG	0.01	0.10	0.04	0.00	0.00	-	28	0.00	-	-
2018_Forklift_LPG	0.12	2	0.75	0.00	0.00	-	54	0.02	-	-
2018_Forklift_LPG	0.01	0.80	0.03	0.00	0.00	-	47.49	0.00	-	-
2018_Rub-trd Gantry Crane_Diesel	0.05	0.21	0.26	0.00	0.00	0.00	149.50	0.01	-	0.00
2018_Rub-trd Gantry Crane_Diesel	0.41	2.58	0.68	0.03	0.03	0.02	2,009.68	0.05	-	0.03
2018_Rub-trd Gantry Crane_Diesel	0.39	0.05	9.94	0.22	0.20	0.01	1,348.57	0.10	-	0.22
2018_Rub-trd Gantry Crane_Diesel	0.87	0.14	28.75	0.54	0.50	0.04	3,970.53	0.31	-	0.54
2018_Rub-trd Gantry Crane_Diesel	0.93	0.14	27.39	0.55	0.50	0.04	4,051.29	0.31	-	0.55
2018_Top handler_Diesel	4.40	9.01	54.93	0.26	0.23	0.05	4,655.53	0.44	-	0.26
2018_Top handler_Diesel	2.55	5.51	20.81	0.11	0.10	0.03	3,265.60	0.25	-	0.11
2018_Top handler_Diesel	2.90	6.18	12.70	0.12	0.11	0.04	3,627.24	0.28	-	0.12
2018_Top handler_Diesel	20.12	36.18	70.17	0.73	0.68	0.18	18,188.05	1.39	-	0.73
2018_Top handler_Diesel	1.27	4.16	5.37	0.05	0.04	0.03	2,961.68	0.15	-	0.05
2018_Top handler_Diesel	0.16	1.16	0.31	0.01	0.01	0.01	932.71	0.02	-	0.01
2018_Yard tractor_LPG	22.52	525.72	90.92	0.91	0.91	-	10,296.57	3.92	-	-
2018_Yard tractor_LPG	60.18	888.03	182.23	1.51	1.51	-	17,066.92	2.17	-	-
2018_Yard tractor_LPG	20.51	52.26	26.36	1.16	1.16	-	13,094.72	1.55	-	-
2018_Yard tractor_LPG	2.01	325.42	7.27	0.56	0.56	-	6,293.30	0.58	-	-
2018_Sweeper_Diesel	0.21	1.19	1.66	0.14	0.12	0.00	225.19	0.03	-	0.14
2018_Truck_Diesel	0.31	0.87	3.49	0.02	0.01	0.01	610.09	0.05	-	0.02
2018_Truck_Diesel	0.48	1.29	2.82	0.15	0.14	0.01	880.42	0.07	-	0.15
2018_Truck_Diesel	0.27	0.59	3.66	0.02	0.01	0.00	377.88	0.03	-	0.02

1hr/24hr Peaking Factor*: 0.070869965

**Note: Using same peaking factor that is applied to trucks*

Table B1-72. 2018 Proposed Mitigated Scenario One Hour Peak Emissions

	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2018_Forklift_Diesel	0.00	0.02	0.02	0.00	0.00	0.00	6	0.00	-	0.00
2018_Forklift_Diesel	0.02	0.10	0.14	0.00	0.00	0.00	21	0.00	-	0.00
2018_Forklift_Diesel	0.04	0.23	0.30	0.00	0.00	0.00	48	0.00	-	0.00
2018_Forklift_Diesel	0.02	0.05	0.19	0.00	0.00	0.00	28	0.00	-	0.00
2018_Forklift_LPG	0.02	0.54	0.08	0.00	0.00	-	16	0.01	-	-
2018_Forklift_LPG	0.00	0.01	0.01	0.00	0.00	-	4	0.00	-	-
2018_Forklift_LPG	0.02	0	0.11	0.00	0.00	-	8	0.00	-	-
2018_Forklift_LPG	0.00	0.12	0.00	0.00	0.00	-	6.83	0.00	-	-
2018_Rub-trd Gantry Crane_Diesel	0.01	0.03	0.04	0.00	0.00	0.00	21.49	0.00	-	0.00
2018_Rub-trd Gantry Crane_Diesel	0.06	0.37	0.10	0.00	0.00	0.00	288.84	0.01	-	0.00
2018_Rub-trd Gantry Crane_Diesel	0.06	0.01	1.43	0.03	0.03	0.00	193.82	0.01	-	0.03
2018_Rub-trd Gantry Crane_Diesel	0.12	0.02	4.13	0.08	0.07	0.01	570.66	0.04	-	0.08
2018_Rub-trd Gantry Crane_Diesel	0.13	0.02	3.94	0.08	0.07	0.01	582.27	0.04	-	0.08
2018_Top handler_Diesel	0.63	1.30	7.89	0.04	0.03	0.01	669.12	0.06	-	0.04
2018_Top handler_Diesel	0.37	0.79	2.99	0.02	0.01	0.00	469.35	0.04	-	0.02
2018_Top handler_Diesel	0.42	0.89	1.82	0.02	0.02	0.01	521.33	0.04	-	0.02
2018_Top handler_Diesel	2.89	5.20	10.09	0.11	0.10	0.03	2,614.08	0.20	-	0.11
2018_Top handler_Diesel	0.18	0.60	0.77	0.01	0.01	0.00	425.67	0.02	-	0.01
2018_Top handler_Diesel	0.02	0.17	0.04	0.00	0.00	0.00	134.05	0.00	-	0.00
2018_Yard tractor_LPG	3.24	75.56	13.07	0.13	0.13	-	1,479.88	0.56	-	-
2018_Yard tractor_LPG	8.65	127.63	26.19	0.22	0.22	-	2,452.95	0.31	-	-
2018_Yard tractor_LPG	2.95	7.51	3.79	0.17	0.17	-	1,882.04	0.22	-	-
2018_Yard tractor_LPG	0.29	46.77	1.04	0.08	0.08	-	904.51	0.08	-	-
2018_Sweeper_Diesel	0.03	0.17	0.24	0.02	0.02	0.00	32.37	0.00	-	0.02
2018_Truck_Diesel	0.04	0.12	0.50	0.00	0.00	0.00	87.69	0.01	-	0.00
2018_Truck_Diesel	0.07	0.19	0.41	0.02	0.02	0.00	126.54	0.01	-	0.02
2018_Truck_Diesel	0.04	0.08	0.53	0.00	0.00	0.00	54.31	0.00	-	0.00

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2023

Table B1-73. 2023 Proposed Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2022	Diesel	0.3	1		0%	822	0%	0%	0%
Forklift	152	2020	Diesel	0.3	2		0%	3,920	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2		0%	1,625	0%	0%	0%
Forklift	75	0	Electric	0.3	1		0%	369	0%	0%	0%
Forklift	160	0	Electric	0.3	2		0%	1,428	0%	0%	0%
Forklift	160	0	Electric	0.3	2		0%	373	0%	0%	0%
Forklift	165	0	Electric	0.3	2		0%	500	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1		0%	383	0%	0%	0%
Rub-trd Gantry Crane	197	2015	Diesel	0.2	5		0%	14,366	0%	0%	0%
Rub-trd Gantry Crane	454	2004	Diesel	0.2	2	Rypos,ULSD	100%	1,880	50%	0%	0%
Rub-trd Gantry Crane	197	2022	Diesel	0.2	8		0%	8,745	0%	0%	0%
Rub-trd Gantry Crane	685	2005	Diesel	0.2	1	Rypos,ULSD	100%	1,251	50%	0%	0%
Top handler	250	2020	Diesel	0.59	8		0%	14,343	0%	0%	0%
Top handler	260	2020	Diesel	0.59	3		0%	5,658	0%	0%	0%
Top handler	260	2022	Diesel	0.59	8		0%	13,213	0%	0%	0%
Top handler	260	2008	Diesel	0.59	15	DPF	100%	46,244	85%	0%	0%
Top handler	335	2011	Diesel	0.59	3		0%	8,668	0%	0%	0%
Top handler	370	2014	Diesel	0.59	1		0%	2,947	0%	0%	0%
Yard tractor	195	2020	CNG (ultra-low NOx)	0.39	53		0%	92,388	0%	0%	0%
Yard tractor	195	2020	CNG (ultra-low NOx)	0.39	59		0%	125,838	0%	0%	0%
Yard tractor	195	2008	LPG	0.39	43		0%	107,679	0%	0%	0%
Yard tractor	231	2011	LPG	0.39	23		0%	35,295	0%	0%	0%
Sweeper	100	2013	Diesel	0.68	1		0%	1,366	0%	0%	0%
Truck	250	2021	Diesel	0.51	2		0%	1,975	0%	0%	0%
Truck	250	2008	Diesel	0.51	2		0%	2,850	0%	0%	0%
Truck	275	2017	Diesel	0.51	1		0%	1,106	0%	0%	0%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-74. 2023 Proposed Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2023_Forklift_Diesel_137_2022	0.070	2.802	0.261	0.009	0.008	0.010	852.435	0.015	-
2023_Forklift_Diesel_152_2020	0.137	3.187	0.279	0.011	0.010	0.010	852.467	0.022	-
2023_Forklift_Diesel_152_2021	0.079	2.852	0.263	0.009	0.009	0.010	852.458	0.018	-
2023_Forklift_Electric_75_0	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric_160_0	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric_160_0	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric_165_0	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Diesel_197_2011	0.157	1.025	1.362	0.010	0.009	0.010	852.538	0.047	-
2023_Rub-trd Gantry Crane_Diesel_197_2015	0.336	1.479	0.334	0.016	0.015	0.010	852.383	0.031	-
2023_Rub-trd Gantry Crane_Diesel_454_2004	0.604	1.270	5.126	0.177	0.163	0.008	852.065	0.066	-
2023_Rub-trd Gantry Crane_Diesel_197_2022	0.079	0.959	0.263	0.009	0.008	0.009	862.883	0.014	-
2023_Rub-trd Gantry Crane_Diesel_685_2005	0.727	1.360	5.398	0.200	0.184	0.009	849.401	0.065	-
2023_Top handler_Diesel_250_2020	0.131	1.075	0.278	0.011	0.010	0.010	852.725	0.018	-
2023_Top handler_Diesel_260_2020	0.136	1.085	0.279	0.011	0.010	0.008	850.068	0.018	-
2023_Top handler_Diesel_260_2022	0.097	1.007	0.268	0.010	0.009	0.008	850.773	0.013	-
2023_Top handler_Diesel_260_2008	1.309	2.031	3.701	0.291	0.268	0.008	854.895	0.065	-
2023_Top handler_Diesel_335_2011	0.930	1.729	2.035	0.023	0.021	0.008	853.916	0.047	-
2023_Top handler_Diesel_370_2014	0.368	1.385	0.342	0.017	0.015	0.008	854.334	0.031	-
2023_Yard tractor_CNG (ultra-low NOx)_195_2020	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2023_Yard tractor_CNG (ultra-low NOx)_195_2020	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2023_Yard tractor_LPG_195_2008	2.503	3.178	1.843	0.060	0.060	-	674.859	0.097	-
2023_Yard tractor_LPG_231_2011	0.360	60.271	1.143	0.060	0.060	-	674.859	0.092	-
2023_Sweeper_Diesel_100_2013	0.393	4.107	0.110	0.014	0.013	0.010	852.448	0.060	-
2023_Truck_Diesel_250_2021	0.084	0.982	0.265	0.009	0.009	0.010	852.519	0.016	-
2023_Truck_Diesel_250_2008	0.626	1.401	2.919	0.176	0.162	0.010	852.572	0.065	-
2023_Truck_Diesel_275_2017	0.135	1.083	0.279	0.011	0.010	0.008	850.650	0.026	-

Table B1-75. 2023 Proposed Mitigated Scenario Annual Mass Emissions

		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2023_Forklift_Diesel	33,768	0.00	0.10	0.01	0.00	0.00	0.00	32	0.00	-	0.00
2023_Forklift_Diesel	178,774	0.03	0.63	0.05	0.00	0.00	0.00	168	0.00	-	0.00
2023_Forklift_Diesel	74,118	0.01	0.23	0.02	0.00	0.00	0.00	70	0.00	-	0.00
2023_Forklift_Electric	8,308	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	68,543	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	17,917	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	24,739	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Diesel	15,094	0.00	0.02	0.02	0.00	0.00	0.00	14	0.00	-	0.00
2023_Rub-trd Gantry Crane_Diesel	566,022	0.21	0.92	0.21	0.01	0.01	0.01	532	0.02	-	0.01
2023_Rub-trd Gantry Crane_Diesel	170,721	0.11	0.24	0.96	0.02	0.02	0.00	160	0.01	-	0.02
2023_Rub-trd Gantry Crane_Diesel	344,562	0.03	0.36	0.10	0.00	0.00	0.00	328	0.01	-	0.00
2023_Rub-trd Gantry Crane_Diesel	171,412	0.14	0.26	1.02	0.02	0.02	0.00	160	0.01	-	0.02
2023_Top handler_Diesel	2,115,523	0.31	2.51	0.65	0.02	0.02	0.02	1,988	0.04	-	0.02
2023_Top handler_Diesel	867,978	0.13	1.04	0.27	0.01	0.01	0.01	813	0.02	-	0.01
2023_Top handler_Diesel	2,026,837	0.22	2.25	0.60	0.02	0.02	0.02	1,901	0.03	-	0.02
2023_Top handler_Diesel	7,093,887	10.24	15.88	28.94	0.34	0.31	0.07	6,685	0.51	-	0.34
2023_Top handler_Diesel	1,713,275	1.76	3.27	3.84	0.04	0.04	0.02	1,613	0.09	-	0.04
2023_Top handler_Diesel	643,252	0.26	0.98	0.24	0.01	0.01	0.01	606	0.02	-	0.01
2023_Yard tractor_CNG (ultra-low NOx)	7,026,094	0.07	11.62	0.08	0.02	0.02	-	3,601	4.34	-	-
2023_Yard tractor_CNG (ultra-low NOx)	9,569,984	0.10	15.82	0.11	0.02	0.02	-	4,905	5.91	-	-
2023_Yard tractor_LPG	8,189,010	22.59	28.68	16.63	0.54	0.54	-	6,092	0.88	-	-
2023_Yard tractor_LPG	3,179,717	1.26	211.25	4.01	0.21	0.21	-	2,365	0.32	-	-
2023_Sweeper_Diesel	92,913	0.04	0.42	0.01	0.00	0.00	0.00	87	0.01	-	0.00
2023_Truck_Diesel	251,769	0.02	0.27	0.07	0.00	0.00	0.00	237	0.00	-	0.00
2023_Truck_Diesel	363,405	0.25	0.56	1.17	0.07	0.06	0.00	342	0.03	-	0.07
2023_Truck_Diesel	155,116	0.02	0.19	0.05	0.00	0.00	0.00	145	0.00	-	0.00

Table B1-76. 2023 Proposed Mitigated Scenario Peak Day Emissions

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2023_Forklift_Diesel	0.0040	0.02	0.84	0.08	0.00	0.00	0.00	257	0.00	-	0.00
2023_Forklift_Diesel	0.0040	0.22	5.09	0.45	0.02	0.02	0.02	1,360	0.03	-	0.02
2023_Forklift_Diesel	0.0040	0.05	1.89	0.17	0.01	0.01	0.01	564	0.01	-	0.01
2023_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Diesel	0.0040	0.02	0.14	0.18	0.00	0.00	0.00	114.87	0.01	-	0.00
2023_Rub-trd Gantry Crane_Diesel	0.0040	1.70	7.47	1.69	0.08	0.07	0.05	4,307.05	0.16	-	0.08
2023_Rub-trd Gantry Crane_Diesel	0.0040	0.92	1.94	7.81	0.13	0.12	0.01	1,298.59	0.10	-	0.13
2023_Rub-trd Gantry Crane_Diesel	0.0040	0.24	2.95	0.81	0.03	0.03	0.03	2,654.19	0.04	-	0.03
2023_Rub-trd Gantry Crane_Diesel	0.0040	1.11	2.08	8.26	0.15	0.14	0.01	1,299.77	0.10	-	0.15
2023_Top handler_Diesel	0.0040	2.48	20.31	5.24	0.20	0.18	0.18	16,104.18	0.34	-	0.20
2023_Top handler_Diesel	0.0040	1.06	8.41	2.16	0.08	0.08	0.06	6,586.80	0.14	-	0.08
2023_Top handler_Diesel	0.0040	1.75	18.23	4.85	0.17	0.16	0.15	15,393.75	0.24	-	0.17
2023_Top handler_Diesel	0.0040	82.90	128.63	234.38	2.76	2.54	0.53	54,138.86	4.14	-	2.76
2023_Top handler_Diesel	0.0040	14.23	26.45	31.13	0.34	0.32	0.13	13,060.34	0.72	-	0.34
2023_Top handler_Diesel	0.0040	2.11	7.96	1.97	0.10	0.09	0.05	4,905.93	0.18	-	0.10
2023_Yard tractor_CNG (ultra-low NOx)	0.0040	0.58	94.08	0.63	0.13	0.13	-	29,166.13	35.12	-	-
2023_Yard tractor_CNG (ultra-low NOx)	0.0040	0.79	128.15	0.85	0.17	0.17	-	39,726.12	47.84	-	-
2023_Yard tractor_LPG	0.0040	182.97	232.29	134.71	4.36	4.36	-	49,335.18	7.12	-	-
2023_Yard tractor_LPG	0.0040	10.21	1,710.82	32.44	1.69	1.69	-	19,156.39	2.61	-	-
2023_Sweeper_Diesel	0.0040	0.33	3.41	0.09	0.01	0.01	0.01	707.06	0.05	-	0.01
2023_Truck_Diesel	0.0040	0.19	2.21	0.59	0.02	0.02	0.02	1,916.10	0.04	-	0.02
2023_Truck_Diesel	0.0040	2.03	4.54	9.47	0.57	0.52	0.03	2,765.89	0.21	-	0.57
2023_Truck_Diesel	0.0040	0.19	1.50	0.39	0.01	0.01	0.01	1,177.93	0.04	-	0.01

8hr/24hr Peaking Factor*: 0.529716683

**Note: Using same peaking factor that is applied to trucks*

Table B1-77. 2023 Proposed Mitigated Scenario Eight Hour Peak Emissions

	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2023_Forklift_Diesel	0.01	0.45	0.04	0.00	0.00	0.00	136	0.00	-	0.00
2023_Forklift_Diesel	0.12	2.69	0.24	0.01	0.01	0.01	721	0.02	-	0.01
2023_Forklift_Diesel	0.03	1.00	0.09	0.00	0.00	0.00	299	0.01	-	0.00
2023_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Diesel	0.01	0.07	0.10	0.00	0.00	0.00	60.85	0.00	-	0.00
2023_Rub-trd Gantry Crane_Diesel	0.90	3.96	0.89	0.04	0.04	0.03	2,281.51	0.08	-	0.04
2023_Rub-trd Gantry Crane_Diesel	0.49	1.03	4.14	0.07	0.07	0.01	687.88	0.05	-	0.07
2023_Rub-trd Gantry Crane_Diesel	0.13	1.56	0.43	0.01	0.01	0.01	1,405.97	0.02	-	0.01
2023_Rub-trd Gantry Crane_Diesel	0.59	1.10	4.38	0.08	0.07	0.01	688.51	0.05	-	0.08
2023_Top handler_Diesel	1.31	10.76	2.78	0.11	0.10	0.10	8,530.65	0.18	-	0.11
2023_Top handler_Diesel	0.56	4.45	1.14	0.04	0.04	0.03	3,489.14	0.07	-	0.04
2023_Top handler_Diesel	0.93	9.66	2.57	0.09	0.09	0.08	8,154.33	0.13	-	0.09
2023_Top handler_Diesel	43.91	68.14	124.16	1.46	1.35	0.28	28,678.26	2.19	-	1.46
2023_Top handler_Diesel	7.54	14.01	16.49	0.18	0.17	0.07	6,918.28	0.38	-	0.18
2023_Top handler_Diesel	1.12	4.21	1.04	0.05	0.05	0.03	2,598.75	0.09	-	0.05
2023_Yard tractor_CNG (ultra-low NOx)	0.31	49.84	0.33	0.07	0.07	-	15,449.79	18.61	-	-
2023_Yard tractor_CNG (ultra-low NOx)	0.42	67.88	0.45	0.09	0.09	-	21,043.59	25.34	-	-
2023_Yard tractor_LPG	96.92	123.05	71.36	2.31	2.31	-	26,133.67	3.77	-	-
2023_Yard tractor_LPG	5.41	906.25	17.18	0.90	0.90	-	10,147.46	1.38	-	-
2023_Sweeper_Diesel	0.17	1.80	0.05	0.01	0.01	0.00	374.54	0.03	-	0.01
2023_Truck_Diesel	0.10	1.17	0.32	0.01	0.01	0.01	1,014.99	0.02	-	0.01
2023_Truck_Diesel	1.08	2.41	5.02	0.30	0.28	0.02	1,465.14	0.11	-	0.30
2023_Truck_Diesel	0.10	0.79	0.20	0.01	0.01	0.01	623.97	0.02	-	0.01

1hr/24hr Peaking Factor*: 0.073685169

**Note: Using same peaking factor that is applied to trucks*

Table B1-78. 2023 Proposed Mitigated Scenario One Hour Peak Emissions

	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2023_Forklift_Diesel	0.00	0.06	0.01	0.00	0.00	0.00	19	0.00	-	0.00
2023_Forklift_Diesel	0.02	0.37	0.03	0.00	0.00	0.00	100	0.00	-	0.00
2023_Forklift_Diesel	0.00	0.14	0.01	0.00	0.00	0.00	42	0.00	-	0.00
2023_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2023_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2023_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.01	0.00	0.00	0.00	8.46	0.00	-	0.00
2023_Rub-trd Gantry Crane_Diesel	0.13	0.55	0.12	0.01	0.01	0.00	317.37	0.01	-	0.01
2023_Rub-trd Gantry Crane_Diesel	0.07	0.14	0.58	0.01	0.01	0.00	95.69	0.01	-	0.01
2023_Rub-trd Gantry Crane_Diesel	0.02	0.22	0.06	0.00	0.00	0.00	195.57	0.00	-	0.00
2023_Rub-trd Gantry Crane_Diesel	0.08	0.15	0.61	0.01	0.01	0.00	95.77	0.01	-	0.01
2023_Top handler_Diesel	0.18	1.50	0.39	0.01	0.01	0.01	1,186.64	0.03	-	0.01
2023_Top handler_Diesel	0.08	0.62	0.16	0.01	0.01	0.00	485.35	0.01	-	0.01
2023_Top handler_Diesel	0.13	1.34	0.36	0.01	0.01	0.01	1,134.29	0.02	-	0.01
2023_Top handler_Diesel	6.11	9.48	17.27	0.20	0.19	0.04	3,989.23	0.30	-	0.20
2023_Top handler_Diesel	1.05	1.95	2.29	0.03	0.02	0.01	962.35	0.05	-	0.03
2023_Top handler_Diesel	0.16	0.59	0.14	0.01	0.01	0.00	361.49	0.01	-	0.01
2023_Yard tractor_CNG (ultra-low NOx)	0.04	6.93	0.05	0.01	0.01	-	2,149.11	2.59	-	-
2023_Yard tractor_CNG (ultra-low NOx)	0.06	9.44	0.06	0.01	0.01	-	2,927.23	3.53	-	-
2023_Yard tractor_LPG	13.48	17.12	9.93	0.32	0.32	-	3,635.27	0.52	-	-
2023_Yard tractor_LPG	0.75	126.06	2.39	0.12	0.12	-	1,411.54	0.19	-	-
2023_Sweeper_Diesel	0.02	0.25	0.01	0.00	0.00	0.00	52.10	0.00	-	0.00
2023_Truck_Diesel	0.01	0.16	0.04	0.00	0.00	0.00	141.19	0.00	-	0.00
2023_Truck_Diesel	0.15	0.33	0.70	0.04	0.04	0.00	203.80	0.02	-	0.04
2023_Truck_Diesel	0.01	0.11	0.03	0.00	0.00	0.00	86.80	0.00	-	0.00

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2030

Table B1-79. 2030 Proposed Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2022	Diesel	0.3	1		0%	917	0%	0%	0%
Forklift	152	2020	Diesel	0.3	2		0%	4,377	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2		0%	1,815	0%	0%	0%
Forklift	75	0	Electric	0.3	1		0%	412	0%	0%	0%
Forklift	160	0	Electric	0.3	2		0%	1,594	0%	0%	0%
Forklift	160	0	Electric	0.3	2		0%	417	0%	0%	0%
Forklift	165	0	Electric	0.3	2		0%	558	0%	0%	0%
Rub-trd Gantry Crane	197	2011	Diesel	0.2	1		0%	428	0%	0%	0%
Rub-trd Gantry Crane	197	2015	Diesel	0.2	5		0%	16,040	0%	0%	0%
Rub-trd Gantry Crane	197	2024	Diesel	0.2	2		0%	2,099	0%	0%	0%
Rub-trd Gantry Crane	197	2022	Diesel	0.2	8		0%	9,764	0%	0%	0%
Rub-trd Gantry Crane	197	2026	Diesel	0.2	1		0%	279	0%	0%	0%
Top handler	250	2020	Diesel	0.59	8		0%	16,014	0%	0%	0%
Top handler	260	2020	Diesel	0.59	3		0%	6,318	0%	0%	0%
Top handler	260	2022	Diesel	0.59	8		0%	14,753	0%	0%	0%
Top handler	260	2024	Diesel	0.59	15		0%	51,633	0%	0%	0%
Top handler	335	2024	Diesel	0.59	3		0%	9,678	0%	0%	0%
Top handler	370	2024	Diesel	0.59	1		0%	3,290	0%	0%	0%
Yard tractor	195	2020	CNG (ultra-low NOx)	0.39	53		0%	103,154	0%	0%	0%
Yard tractor	195	2020	CNG (ultra-low NOx)	0.39	59		0%	140,503	0%	0%	0%
Yard tractor	195	2024	CNG (ultra-low NOx)	0.39	43		0%	120,228	0%	0%	0%
Yard tractor	231	2024	CNG (ultra-low NOx)	0.39	23		0%	39,408	0%	0%	0%
Sweeper	100	2025	Diesel	0.68	1		0%	1,526	0%	0%	0%
Truck	250	2021	Diesel	0.51	2		0%	2,205	0%	0%	0%
Truck	250	2024	Diesel	0.51	2		0%	3,182	0%	0%	0%
Truck	275	2017	Diesel	0.51	1		0%	1,235	0%	0%	0%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-80. 2030 Proposed Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2030_Forklift_Diesel_137_2022	0.132	3.158	0.278	0.011	0.010	0.010	852.437	0.031	-
2030_Forklift_Diesel_152_2020	0.284	4.038	0.319	0.016	0.015	0.010	852.467	0.031	-
2030_Forklift_Diesel_152_2021	0.140	3.207	0.280	0.011	0.010	0.010	852.441	0.031	-
2030_Forklift_Electric_75_0	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric_160_0	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric_160_0	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric_165_0	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Diesel_197_2011	0.202	1.082	1.401	0.011	0.010	0.010	852.521	0.047	-
2030_Rub-trd Gantry Crane_Diesel_197_2015	0.556	1.914	0.394	0.021	0.020	0.010	852.371	0.031	-
2030_Rub-trd Gantry Crane_Diesel_197_2024	0.136	1.042	0.279	0.011	0.010	0.008	852.494	0.027	-
2030_Rub-trd Gantry Crane_Diesel_197_2022	0.170	1.094	0.288	0.012	0.011	0.008	840.945	0.031	-
2030_Rub-trd Gantry Crane_Diesel_197_2026	0.131	1.036	0.277	0.011	0.010	0.008	840.681	0.021	-
2030_Top handler_Diesel_250_2020	0.269	1.347	0.315	0.014	0.013	0.010	852.512	0.031	-
2030_Top handler_Diesel_260_2020	0.283	1.374	0.319	0.014	0.013	0.008	851.981	0.031	-
2030_Top handler_Diesel_260_2022	0.252	1.314	0.311	0.014	0.013	0.008	851.918	0.031	-
2030_Top handler_Diesel_260_2024	0.299	1.406	0.323	0.015	0.014	0.008	849.733	0.026	-
2030_Top handler_Diesel_335_2024	0.348	1.356	0.337	0.016	0.015	0.008	849.733	0.026	-
2030_Top handler_Diesel_370_2024	0.273	1.246	0.316	0.014	0.013	0.008	849.733	0.026	-
2030_Yard tractor_CNG (ultra-low NOx)_195_2020	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2030_Yard tractor_CNG (ultra-low NOx)_195_2020	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2030_Yard tractor_CNG (ultra-low NOx)_195_2024	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2030_Yard tractor_CNG (ultra-low NOx)_231_2024	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2030_Sweeper_Diesel_100_2025	0.140	3.626	0.103	0.011	0.010	0.010	852.449	0.032	-
2030_Truck_Diesel_250_2021	0.158	1.128	0.285	0.011	0.010	0.010	852.710	0.031	-
2030_Truck_Diesel_250_2024	0.159	1.130	0.285	0.011	0.010	0.010	852.038	0.026	-
2030_Truck_Diesel_275_2017	0.218	1.247	0.301	0.013	0.012	0.008	854.206	0.031	-

Table B1-81. 2030 Proposed Mitigated Scenario Annual Mass Emissions

		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2030_Forklift_Diesel	37,704	0.01	0.13	0.01	0.00	0.00	0.00	35	0.00	-	0.00
2030_Forklift_Diesel	199,607	0.06	0.89	0.07	0.00	0.00	0.00	188	0.01	-	0.00
2030_Forklift_Diesel	82,755	0.01	0.29	0.03	0.00	0.00	0.00	78	0.00	-	0.00
2030_Forklift_Electric	9,277	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	76,530	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	20,005	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	27,622	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Diesel	16,853	0.00	0.02	0.03	0.00	0.00	0.00	16	0.00	-	0.00
2030_Rub-trd Gantry Crane_Diesel	631,983	0.39	1.33	0.27	0.01	0.01	0.01	594	0.02	-	0.01
2030_Rub-trd Gantry Crane_Diesel	82,712	0.01	0.10	0.03	0.00	0.00	0.00	78	0.00	-	0.00
2030_Rub-trd Gantry Crane_Diesel	384,716	0.07	0.46	0.12	0.00	0.00	0.00	357	0.01	-	0.00
2030_Rub-trd Gantry Crane_Diesel	11,008	0.00	0.01	0.00	0.00	0.00	0.00	10	0.00	-	0.00
2030_Top handler_Diesel	2,362,055	0.70	3.51	0.82	0.04	0.03	0.02	2,220	0.08	-	0.04
2030_Top handler_Diesel	969,128	0.30	1.47	0.34	0.02	0.01	0.01	910	0.03	-	0.02
2030_Top handler_Diesel	2,263,034	0.63	3.28	0.77	0.03	0.03	0.02	2,125	0.08	-	0.03
2030_Top handler_Diesel	7,920,571	2.61	12.28	2.82	0.13	0.12	0.07	7,419	0.22	-	0.13
2030_Top handler_Diesel	1,912,931	0.73	2.86	0.71	0.03	0.03	0.02	1,792	0.05	-	0.03
2030_Top handler_Diesel	718,214	0.22	0.99	0.25	0.01	0.01	0.01	673	0.02	-	0.01
2030_Yard tractor_CNG (ultra-low NOx)	7,844,878	0.08	12.97	0.09	0.02	0.02	-	4,021	4.84	-	-
2030_Yard tractor_CNG (ultra-low NOx)	10,685,221	0.11	17.67	0.12	0.02	0.02	-	5,477	6.60	-	-
2030_Yard tractor_CNG (ultra-low NOx)	9,143,315	0.09	15.12	0.10	0.02	0.02	-	4,687	5.64	-	-
2030_Yard tractor_CNG (ultra-low NOx)	3,550,265	0.04	5.87	0.04	0.01	0.01	-	1,820	2.19	-	-
2030_Sweeper_Diesel	103,740	0.02	0.41	0.01	0.00	0.00	0.00	97	0.00	-	0.00
2030_Truck_Diesel	281,109	0.05	0.35	0.09	0.00	0.00	0.00	264	0.01	-	0.00
2030_Truck_Diesel	405,755	0.07	0.51	0.13	0.01	0.00	0.00	381	0.01	-	0.01
2030_Truck_Diesel	173,192	0.04	0.24	0.06	0.00	0.00	0.00	163	0.01	-	0.00

Table B1-82. 2030 Proposed Mitigated Scenario Peak Day Emissions

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2030_Forklift_Diesel	0.0040	0.04	1.06	0.09	0.00	0.00	0.00	287	0.01	-	0.00
2030_Forklift_Diesel	0.0040	0.51	7.20	0.57	0.03	0.03	0.02	1,519	0.06	-	0.03
2030_Forklift_Diesel	0.0040	0.10	2.37	0.21	0.01	0.01	0.01	630	0.02	-	0.01
2030_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Diesel	0.0040	0.03	0.16	0.21	0.00	0.00	0.00	128.26	0.01	-	0.00
2030_Rub-trd Gantry Crane_Diesel	0.0040	3.14	10.80	2.22	0.12	0.11	0.05	4,808.90	0.17	-	0.12
2030_Rub-trd Gantry Crane_Diesel	0.0040	0.10	0.77	0.21	0.01	0.01	0.01	629.47	0.02	-	0.01
2030_Rub-trd Gantry Crane_Diesel	0.0040	0.59	3.76	0.99	0.04	0.04	0.03	2,888.15	0.11	-	0.04
2030_Rub-trd Gantry Crane_Diesel	0.0040	0.01	0.10	0.03	0.00	0.00	0.00	82.62	0.00	-	0.00
2030_Top handler_Diesel	0.0040	5.67	28.40	6.65	0.30	0.27	0.20	17,976.39	0.65	-	0.30
2030_Top handler_Diesel	0.0040	2.45	11.89	2.76	0.12	0.11	0.07	7,370.94	0.27	-	0.12
2030_Top handler_Diesel	0.0040	5.09	26.54	6.28	0.28	0.25	0.17	17,210.78	0.62	-	0.28
2030_Top handler_Diesel	0.0040	21.15	99.42	22.87	1.05	0.96	0.59	60,082.91	1.81	-	1.05
2030_Top handler_Diesel	0.0040	5.94	23.15	5.75	0.27	0.25	0.14	14,510.88	0.44	-	0.27
2030_Top handler_Diesel	0.0040	1.75	7.99	2.03	0.09	0.08	0.05	5,448.14	0.16	-	0.09
2030_Yard tractor_CNG (ultra-low NOx)	0.0040	0.65	105.05	0.70	0.14	0.14	-	32,565.00	39.22	-	-
2030_Yard tractor_CNG (ultra-low NOx)	0.0040	0.89	143.08	0.95	0.19	0.19	-	44,355.59	53.42	-	-
2030_Yard tractor_CNG (ultra-low NOx)	0.0040	0.76	122.44	0.82	0.16	0.16	-	37,954.96	45.71	-	-
2030_Yard tractor_CNG (ultra-low NOx)	0.0040	0.29	47.54	0.32	0.06	0.06	-	14,737.56	17.75	-	-
2030_Sweeper_Diesel	0.0040	0.13	3.36	0.10	0.01	0.01	0.01	789.46	0.03	-	0.01
2030_Truck_Diesel	0.0040	0.40	2.83	0.71	0.03	0.03	0.02	2,139.87	0.08	-	0.03
2030_Truck_Diesel	0.0040	0.58	4.09	1.03	0.04	0.04	0.03	3,086.27	0.09	-	0.04
2030_Truck_Diesel	0.0040	0.34	1.93	0.47	0.02	0.02	0.01	1,320.70	0.05	-	0.02

8hr/24hr Peaking Factor*: 0.529716683

**Note: Using same peaking factor that is applied to trucks*

Table B1-83. 2030 Proposed Mitigated Scenario Eight Hour Peak Emissions

	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2030_Forklift_Diesel	0.02	0.56	0.05	0.00	0.00	0.00	152	0.01	-	0.00
2030_Forklift_Diesel	0.27	3.81	0.30	0.02	0.01	0.01	805	0.03	-	0.02
2030_Forklift_Diesel	0.05	1.26	0.11	0.00	0.00	0.00	334	0.01	-	0.00
2030_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Diesel	0.02	0.09	0.11	0.00	0.00	0.00	67.94	0.00	-	0.00
2030_Rub-trd Gantry Crane_Diesel	1.66	5.72	1.18	0.06	0.06	0.03	2,547.35	0.09	-	0.06
2030_Rub-trd Gantry Crane_Diesel	0.05	0.41	0.11	0.00	0.00	0.00	333.44	0.01	-	0.00
2030_Rub-trd Gantry Crane_Diesel	0.31	1.99	0.52	0.02	0.02	0.02	1,529.90	0.06	-	0.02
2030_Rub-trd Gantry Crane_Diesel	0.01	0.05	0.01	0.00	0.00	0.00	43.76	0.00	-	0.00
2030_Top handler_Diesel	3.00	15.04	3.52	0.16	0.14	0.11	9,522.39	0.35	-	0.16
2030_Top handler_Diesel	1.30	6.30	1.46	0.07	0.06	0.04	3,904.51	0.14	-	0.07
2030_Top handler_Diesel	2.70	14.06	3.32	0.15	0.13	0.09	9,116.84	0.33	-	0.15
2030_Top handler_Diesel	11.20	52.67	12.12	0.56	0.51	0.31	31,826.92	0.96	-	0.56
2030_Top handler_Diesel	3.14	12.26	3.05	0.15	0.13	0.08	7,686.66	0.23	-	0.15
2030_Top handler_Diesel	0.93	4.23	1.07	0.05	0.04	0.03	2,885.97	0.09	-	0.05
2030_Yard tractor_CNG (ultra-low NOx)	0.35	55.65	0.37	0.07	0.07	-	17,250.22	20.77	-	-
2030_Yard tractor_CNG (ultra-low NOx)	0.47	75.79	0.51	0.10	0.10	-	23,495.90	28.30	-	-
2030_Yard tractor_CNG (ultra-low NOx)	0.40	64.86	0.43	0.09	0.09	-	20,105.38	24.21	-	-
2030_Yard tractor_CNG (ultra-low NOx)	0.16	25.18	0.17	0.03	0.03	-	7,806.73	9.40	-	-
2030_Sweeper_Diesel	0.07	1.78	0.05	0.01	0.01	0.00	418.19	0.02	-	0.01
2030_Truck_Diesel	0.21	1.50	0.38	0.01	0.01	0.01	1,133.53	0.04	-	0.01
2030_Truck_Diesel	0.31	2.17	0.55	0.02	0.02	0.02	1,634.85	0.05	-	0.02
2030_Truck_Diesel	0.18	1.02	0.25	0.01	0.01	0.01	699.59	0.03	-	0.01

1hr/24hr Peaking Factor*: 0.073685169

**Note: Using same peaking factor that is applied to trucks*

Table B1-84. 2030 Proposed Mitigated Scenario One Hour Peak Emissions

	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2030_Forklift_Diesel	0.00	0.08	0.01	0.00	0.00	0.00	21	0.00	-	0.00
2030_Forklift_Diesel	0.04	0.53	0.04	0.00	0.00	0.00	112	0.00	-	0.00
2030_Forklift_Diesel	0.01	0.17	0.02	0.00	0.00	0.00	46	0.00	-	0.00
2030_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2030_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2030_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.02	0.00	0.00	0.00	9.45	0.00	-	0.00
2030_Rub-trd Gantry Crane_Diesel	0.23	0.80	0.16	0.01	0.01	0.00	354.34	0.01	-	0.01
2030_Rub-trd Gantry Crane_Diesel	0.01	0.06	0.02	0.00	0.00	0.00	46.38	0.00	-	0.00
2030_Rub-trd Gantry Crane_Diesel	0.04	0.28	0.07	0.00	0.00	0.00	212.81	0.01	-	0.00
2030_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.00	0.00	0.00	0.00	6.09	0.00	-	0.00
2030_Top handler_Diesel	0.42	2.09	0.49	0.02	0.02	0.01	1,324.59	0.05	-	0.02
2030_Top handler_Diesel	0.18	0.88	0.20	0.01	0.01	0.01	543.13	0.02	-	0.01
2030_Top handler_Diesel	0.38	1.96	0.46	0.02	0.02	0.01	1,268.18	0.05	-	0.02
2030_Top handler_Diesel	1.56	7.33	1.69	0.08	0.07	0.04	4,427.22	0.13	-	0.08
2030_Top handler_Diesel	0.44	1.71	0.42	0.02	0.02	0.01	1,069.24	0.03	-	0.02
2030_Top handler_Diesel	0.13	0.59	0.15	0.01	0.01	0.00	401.45	0.01	-	0.01
2030_Yard tractor_CNG (ultra-low NOx)	0.05	7.74	0.05	0.01	0.01	-	2,399.56	2.89	-	-
2030_Yard tractor_CNG (ultra-low NOx)	0.07	10.54	0.07	0.01	0.01	-	3,268.35	3.94	-	-
2030_Yard tractor_CNG (ultra-low NOx)	0.06	9.02	0.06	0.01	0.01	-	2,796.72	3.37	-	-
2030_Yard tractor_CNG (ultra-low NOx)	0.02	3.50	0.02	0.00	0.00	-	1,085.94	1.31	-	-
2030_Sweeper_Diesel	0.01	0.25	0.01	0.00	0.00	0.00	58.17	0.00	-	0.00
2030_Truck_Diesel	0.03	0.21	0.05	0.00	0.00	0.00	157.68	0.01	-	0.00
2030_Truck_Diesel	0.04	0.30	0.08	0.00	0.00	0.00	227.41	0.01	-	0.00
2030_Truck_Diesel	0.02	0.14	0.03	0.00	0.00	0.00	97.32	0.00	-	0.00

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2036

Table B1-85. 2036 Proposed Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2022	Diesel	0.3	1		0%	917	0%	0%	0%
Forklift	152	2036	Diesel	0.3	2		0%	4,377	0%	0%	0%
Forklift	152	2021	Diesel	0.3	2		0%	1,815	0%	0%	0%
Forklift	75	0	Electric	0.3	1		0%	412	0%	0%	0%
Forklift	160	0	Electric	0.3	2		0%	1,594	0%	0%	0%
Forklift	160	0	Electric	0.3	2		0%	417	0%	0%	0%
Forklift	165	0	Electric	0.3	2		0%	558	0%	0%	0%
Rub-trd Gantry Crane	197	2035	Diesel	0.2	1		0%	428	0%	0%	0%
Rub-trd Gantry Crane	197	2015	Diesel	0.2	5		0%	16,040	0%	0%	0%
Rub-trd Gantry Crane	197	2024	Diesel	0.2	2		0%	2,099	0%	0%	0%
Rub-trd Gantry Crane	197	2022	Diesel	0.2	8		0%	9,764	0%	0%	0%
Rub-trd Gantry Crane	197	2026	Diesel	0.2	1		0%	279	0%	0%	0%
Top handler	250	2036	Diesel	0.59	8		0%	16,014	0%	0%	0%
Top handler	260	2036	Diesel	0.59	3		0%	6,318	0%	0%	0%
Top handler	260	2022	Diesel	0.59	8		0%	14,753	0%	0%	0%
Top handler	260	2024	Diesel	0.59	15		0%	51,633	0%	0%	0%
Top handler	335	2024	Diesel	0.59	3		0%	9,678	0%	0%	0%
Top handler	370	2024	Diesel	0.59	1		0%	3,290	0%	0%	0%
Yard tractor	195	2032	CNG (ultra-low NOx)	0.39	53		0%	103,154	0%	0%	0%
Yard tractor	195	2032	CNG (ultra-low NOx)	0.39	59		0%	140,503	0%	0%	0%
Yard tractor	195	2036	CNG (ultra-low NOx)	0.39	43		0%	120,228	0%	0%	0%
Yard tractor	231	2036	CNG (ultra-low NOx)	0.39	23		0%	39,408	0%	0%	0%
Sweeper	100	2025	Diesel	0.68	1		0%	1,526	0%	0%	0%
Truck	250	2021	Diesel	0.51	2		0%	2,205	0%	0%	0%
Truck	250	2024	Diesel	0.51	2		0%	3,182	0%	0%	0%
Truck	275	2033	Diesel	0.51	1		0%	1,235	0%	0%	0%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-86. 2036 Proposed Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2036_Forklift_Diesel_137_2022	0.184	3.464	0.292	0.013	0.012	0.010	852.541	0.031	-
2036_Forklift_Diesel_152_2036	0.074	2.822	0.262	0.009	0.008	0.010	852.453	0.012	-
2036_Forklift_Diesel_152_2021	0.193	3.512	0.294	0.013	0.012	0.010	852.463	0.031	-
2036_Forklift_Electric_75_0	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_160_0	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_160_0	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric_165_0	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Diesel_197_2035	0.061	0.936	0.258	0.009	0.008	0.010	852.471	0.014	-
2036_Rub-trd Gantry Crane_Diesel_197_2015	0.745	2.286	0.446	0.026	0.024	0.010	852.811	0.031	-
2036_Rub-trd Gantry Crane_Diesel_197_2024	0.207	1.147	0.298	0.012	0.011	0.008	852.185	0.031	-
2036_Rub-trd Gantry Crane_Diesel_197_2022	0.249	1.210	0.310	0.014	0.012	0.008	832.495	0.030	-
2036_Rub-trd Gantry Crane_Diesel_197_2026	0.225	1.175	0.303	0.013	0.012	0.009	872.369	0.032	-
2036_Top handler_Diesel_250_2036	0.072	0.959	0.261	0.009	0.008	0.010	852.213	0.011	-
2036_Top handler_Diesel_260_2036	0.074	0.961	0.262	0.009	0.008	0.008	850.443	0.011	-
2036_Top handler_Diesel_260_2022	0.385	1.576	0.347	0.017	0.016	0.008	853.018	0.031	-
2036_Top handler_Diesel_260_2024	0.510	1.823	0.381	0.020	0.019	0.008	852.431	0.031	-
2036_Top handler_Diesel_335_2024	0.600	1.729	0.406	0.023	0.021	0.008	852.431	0.031	-
2036_Top handler_Diesel_370_2024	0.462	1.525	0.368	0.019	0.017	0.008	852.431	0.031	-
2036_Yard tractor_CNG (ultra-low NOx)_195_2032	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2036_Yard tractor_CNG (ultra-low NOx)_195_2032	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2036_Yard tractor_CNG (ultra-low NOx)_195_2036	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2036_Yard tractor_CNG (ultra-low NOx)_231_2036	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2036_Sweeper_Diesel_100_2025	0.228	4.203	0.112	0.014	0.013	0.010	852.456	0.045	-
2036_Truck_Diesel_250_2021	0.222	1.253	0.302	0.013	0.012	0.010	852.373	0.031	-
2036_Truck_Diesel_250_2024	0.251	1.311	0.310	0.014	0.013	0.010	852.673	0.031	-
2036_Truck_Diesel_275_2033	0.100	1.013	0.269	0.010	0.009	0.008	851.977	0.018	-

Table B1-87. 2036 Proposed Mitigated Scenario Annual Mass Emissions

		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2036_Forklift_Diesel	37,704	0.01	0.14	0.01	0.00	0.00	0.00	35	0.00	-	0.00
2036_Forklift_Diesel	199,607	0.02	0.62	0.06	0.00	0.00	0.00	188	0.00	-	0.00
2036_Forklift_Diesel	82,755	0.02	0.32	0.03	0.00	0.00	0.00	78	0.00	-	0.00
2036_Forklift_Electric	9,277	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	76,530	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	20,005	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	27,622	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Diesel	16,853	0.00	0.02	0.00	0.00	0.00	0.00	16	0.00	-	0.00
2036_Rub-trd Gantry Crane_Diesel	631,983	0.52	1.59	0.31	0.02	0.02	0.01	594	0.02	-	0.02
2036_Rub-trd Gantry Crane_Diesel	82,712	0.02	0.10	0.03	0.00	0.00	0.00	78	0.00	-	0.00
2036_Rub-trd Gantry Crane_Diesel	384,716	0.11	0.51	0.13	0.01	0.01	0.00	353	0.01	-	0.01
2036_Rub-trd Gantry Crane_Diesel	11,008	0.00	0.01	0.00	0.00	0.00	0.00	11	0.00	-	0.00
2036_Top handler_Diesel	2,362,055	0.19	2.50	0.68	0.02	0.02	0.02	2,219	0.03	-	0.02
2036_Top handler_Diesel	969,128	0.08	1.03	0.28	0.01	0.01	0.01	908	0.01	-	0.01
2036_Top handler_Diesel	2,263,034	0.96	3.93	0.87	0.04	0.04	0.02	2,128	0.08	-	0.04
2036_Top handler_Diesel	7,920,571	4.46	15.91	3.33	0.18	0.16	0.07	7,442	0.27	-	0.18
2036_Top handler_Diesel	1,912,931	1.27	3.65	0.86	0.05	0.04	0.02	1,797	0.07	-	0.05
2036_Top handler_Diesel	718,214	0.37	1.21	0.29	0.02	0.01	0.01	675	0.02	-	0.02
2036_Yard tractor_CNG (ultra-low NOx)	7,844,878	0.08	12.97	0.09	0.02	0.02	-	4,021	4.84	-	-
2036_Yard tractor_CNG (ultra-low NOx)	10,685,221	0.11	17.67	0.12	0.02	0.02	-	5,477	6.60	-	-
2036_Yard tractor_CNG (ultra-low NOx)	9,143,315	0.09	15.12	0.10	0.02	0.02	-	4,687	5.64	-	-
2036_Yard tractor_CNG (ultra-low NOx)	3,550,265	0.04	5.87	0.04	0.01	0.01	-	1,820	2.19	-	-
2036_Sweeper_Diesel	103,740	0.03	0.48	0.01	0.00	0.00	0.00	97	0.01	-	0.00
2036_Truck_Diesel	281,109	0.07	0.39	0.09	0.00	0.00	0.00	264	0.01	-	0.00
2036_Truck_Diesel	405,755	0.11	0.59	0.14	0.01	0.01	0.00	381	0.01	-	0.01
2036_Truck_Diesel	173,192	0.02	0.19	0.05	0.00	0.00	0.00	163	0.00	-	0.00

Table B1-88. 2036 Proposed Mitigated Scenario Peak Day Emissions

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2036_Forklift_Diesel	0.0040	0.06	1.17	0.10	0.00	0.00	0.00	287	0.01	-	0.00
2036_Forklift_Diesel	0.0040	0.13	5.03	0.47	0.02	0.02	0.02	1,519	0.02	-	0.02
2036_Forklift_Diesel	0.0040	0.14	2.59	0.22	0.01	0.01	0.01	630	0.02	-	0.01
2036_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Diesel	0.0040	0.01	0.14	0.04	0.00	0.00	0.00	128.25	0.00	-	0.00
2036_Rub-trd Gantry Crane_Diesel	0.0040	4.21	12.90	2.51	0.15	0.14	0.05	4,811.38	0.17	-	0.15
2036_Rub-trd Gantry Crane_Diesel	0.0040	0.15	0.85	0.22	0.01	0.01	0.01	629.24	0.02	-	0.01
2036_Rub-trd Gantry Crane_Diesel	0.0040	0.85	4.16	1.06	0.05	0.04	0.03	2,859.13	0.10	-	0.05
2036_Rub-trd Gantry Crane_Diesel	0.0040	0.02	0.12	0.03	0.00	0.00	0.00	85.73	0.00	-	0.00
2036_Top handler_Diesel	0.0040	1.52	20.22	5.51	0.19	0.18	0.20	17,970.09	0.22	-	0.19
2036_Top handler_Diesel	0.0040	0.64	8.32	2.26	0.08	0.07	0.07	7,357.63	0.09	-	0.08
2036_Top handler_Diesel	0.0040	7.78	31.84	7.01	0.34	0.32	0.17	17,233.01	0.63	-	0.34
2036_Top handler_Diesel	0.0040	36.09	128.89	26.96	1.43	1.32	0.59	60,273.69	2.19	-	1.43
2036_Top handler_Diesel	0.0040	10.25	29.53	6.93	0.38	0.35	0.14	14,556.96	0.53	-	0.38
2036_Top handler_Diesel	0.0040	2.96	9.78	2.36	0.12	0.11	0.05	5,465.44	0.20	-	0.12
2036_Yard tractor_CNG (ultra-low NOx)	0.0040	0.65	105.05	0.70	0.14	0.14	-	32,565.00	39.22	-	-
2036_Yard tractor_CNG (ultra-low NOx)	0.0040	0.89	143.08	0.95	0.19	0.19	-	44,355.59	53.42	-	-
2036_Yard tractor_CNG (ultra-low NOx)	0.0040	0.76	122.44	0.82	0.16	0.16	-	37,954.96	45.71	-	-
2036_Yard tractor_CNG (ultra-low NOx)	0.0040	0.29	47.54	0.32	0.06	0.06	-	14,737.56	17.75	-	-
2036_Sweeper_Diesel	0.0040	0.21	3.89	0.10	0.01	0.01	0.01	789.46	0.04	-	0.01
2036_Truck_Diesel	0.0040	0.56	3.14	0.76	0.03	0.03	0.02	2,139.03	0.08	-	0.03
2036_Truck_Diesel	0.0040	0.91	4.75	1.12	0.05	0.05	0.03	3,088.57	0.11	-	0.05
2036_Truck_Diesel	0.0040	0.15	1.57	0.42	0.02	0.01	0.01	1,317.25	0.03	-	0.02

8hr/24hr Peaking Factor*: 0.529716683

**Note: Using same peaking factor that is applied to trucks*

Table B1-89. 2036 Proposed Mitigated Scenario Eight Hour Peak Emissions

	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2036_Forklift_Diesel	0.03	0.62	0.05	0.00	0.00	0.00	152	0.01	-	0.00
2036_Forklift_Diesel	0.07	2.66	0.25	0.01	0.01	0.01	805	0.01	-	0.01
2036_Forklift_Diesel	0.08	1.37	0.12	0.01	0.00	0.00	334	0.01	-	0.01
2036_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Diesel	0.00	0.07	0.02	0.00	0.00	0.00	67.94	0.00	-	0.00
2036_Rub-trd Gantry Crane_Diesel	2.23	6.83	1.33	0.08	0.07	0.03	2,548.67	0.09	-	0.08
2036_Rub-trd Gantry Crane_Diesel	0.08	0.45	0.12	0.00	0.00	0.00	333.32	0.01	-	0.00
2036_Rub-trd Gantry Crane_Diesel	0.45	2.20	0.56	0.02	0.02	0.02	1,514.53	0.06	-	0.02
2036_Rub-trd Gantry Crane_Diesel	0.01	0.06	0.02	0.00	0.00	0.00	45.41	0.00	-	0.00
2036_Top handler_Diesel	0.81	10.71	2.92	0.10	0.09	0.11	9,519.06	0.12	-	0.10
2036_Top handler_Diesel	0.34	4.41	1.20	0.04	0.04	0.04	3,897.46	0.05	-	0.04
2036_Top handler_Diesel	4.12	16.86	3.71	0.18	0.17	0.09	9,128.61	0.33	-	0.18
2036_Top handler_Diesel	19.12	68.27	14.28	0.76	0.70	0.31	31,927.98	1.16	-	0.76
2036_Top handler_Diesel	5.43	15.64	3.67	0.20	0.19	0.08	7,711.06	0.28	-	0.20
2036_Top handler_Diesel	1.57	5.18	1.25	0.06	0.06	0.03	2,895.13	0.11	-	0.06
2036_Yard tractor_CNG (ultra-low NOx)	0.35	55.65	0.37	0.07	0.07	-	17,250.22	20.77	-	-
2036_Yard tractor_CNG (ultra-low NOx)	0.47	75.79	0.51	0.10	0.10	-	23,495.90	28.30	-	-
2036_Yard tractor_CNG (ultra-low NOx)	0.40	64.86	0.43	0.09	0.09	-	20,105.38	24.21	-	-
2036_Yard tractor_CNG (ultra-low NOx)	0.16	25.18	0.17	0.03	0.03	-	7,806.73	9.40	-	-
2036_Sweeper_Diesel	0.11	2.06	0.05	0.01	0.01	0.00	418.19	0.02	-	0.01
2036_Truck_Diesel	0.29	1.67	0.40	0.02	0.02	0.01	1,133.08	0.04	-	0.02
2036_Truck_Diesel	0.48	2.52	0.60	0.03	0.02	0.02	1,636.07	0.06	-	0.03
2036_Truck_Diesel	0.08	0.83	0.22	0.01	0.01	0.01	697.77	0.01	-	0.01

1hr/24hr Peaking Factor*: 0.073685169

**Note: Using same peaking factor that is applied to trucks*

Table B1-90. 2036 Proposed Mitigated Scenario One Hour Peak Emissions

	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2036_Forklift_Diesel	0.00	0.09	0.01	0.00	0.00	0.00	21	0.00	-	0.00
2036_Forklift_Diesel	0.01	0.37	0.03	0.00	0.00	0.00	112	0.00	-	0.00
2036_Forklift_Diesel	0.01	0.19	0.02	0.00	0.00	0.00	46	0.00	-	0.00
2036_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2036_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2036_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.00	0.00	0.00	0.00	9.45	0.00	-	0.00
2036_Rub-trd Gantry Crane_Diesel	0.31	0.95	0.19	0.01	0.01	0.00	354.53	0.01	-	0.01
2036_Rub-trd Gantry Crane_Diesel	0.01	0.06	0.02	0.00	0.00	0.00	46.37	0.00	-	0.00
2036_Rub-trd Gantry Crane_Diesel	0.06	0.31	0.08	0.00	0.00	0.00	210.68	0.01	-	0.00
2036_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.00	0.00	0.00	0.00	6.32	0.00	-	0.00
2036_Top handler_Diesel	0.11	1.49	0.41	0.01	0.01	0.01	1,324.13	0.02	-	0.01
2036_Top handler_Diesel	0.05	0.61	0.17	0.01	0.01	0.01	542.15	0.01	-	0.01
2036_Top handler_Diesel	0.57	2.35	0.52	0.03	0.02	0.01	1,269.82	0.05	-	0.03
2036_Top handler_Diesel	2.66	9.50	1.99	0.11	0.10	0.04	4,441.28	0.16	-	0.11
2036_Top handler_Diesel	0.76	2.18	0.51	0.03	0.03	0.01	1,072.63	0.04	-	0.03
2036_Top handler_Diesel	0.22	0.72	0.17	0.01	0.01	0.00	402.72	0.01	-	0.01
2036_Yard tractor_CNG (ultra-low NOx)	0.05	7.74	0.05	0.01	0.01	-	2,399.56	2.89	-	-
2036_Yard tractor_CNG (ultra-low NOx)	0.07	10.54	0.07	0.01	0.01	-	3,268.35	3.94	-	-
2036_Yard tractor_CNG (ultra-low NOx)	0.06	9.02	0.06	0.01	0.01	-	2,796.72	3.37	-	-
2036_Yard tractor_CNG (ultra-low NOx)	0.02	3.50	0.02	0.00	0.00	-	1,085.94	1.31	-	-
2036_Sweeper_Diesel	0.02	0.29	0.01	0.00	0.00	0.00	58.17	0.00	-	0.00
2036_Truck_Diesel	0.04	0.23	0.06	0.00	0.00	0.00	157.61	0.01	-	0.00
2036_Truck_Diesel	0.07	0.35	0.08	0.00	0.00	0.00	227.58	0.01	-	0.00
2036_Truck_Diesel	0.01	0.12	0.03	0.00	0.00	0.00	97.06	0.00	-	0.00

WBICTF CARGO HANDLING EQUIPMENT PARAMETERS

Analysis Year	2045

Table B1-91. 2045 Proposed Mitigated Scenario - CHE Equipment List

Equipment	HP(WBCT)	MY (WBCT)	Fuel Type (WBCT)	Load Factor (WBCT)	Quantity (WBCT)	Control Type (WBCT)	% of Equipment Controlled (WBCT)	Operating Annual Hrs for CS	Emission Controls (% reduction) PM	HC	CO
Forklift	137	2038	Diesel	0.3	1		0%	917	0%	0%	0%
Forklift	152	2036	Diesel	0.3	2		0%	4,377	0%	0%	0%
Forklift	152	2037	Diesel	0.3	2		0%	1,815	0%	0%	0%
Forklift	75	0	Electric	0.3	1		0%	412	0%	0%	0%
Forklift	160	0	Electric	0.3	2		0%	1,594	0%	0%	0%
Forklift	160	0	Electric	0.3	2		0%	417	0%	0%	0%
Forklift	165	0	Electric	0.3	2		0%	558	0%	0%	0%
Rub-trd Gantry Crane	197	2035	Diesel	0.2	1		0%	428	0%	0%	0%
Rub-trd Gantry Crane	197	2039	Diesel	0.2	5		0%	16,040	0%	0%	0%
Rub-trd Gantry Crane	197	2024	Diesel	0.2	2		0%	2,099	0%	0%	0%
Rub-trd Gantry Crane	197	2022	Diesel	0.2	8		0%	9,764	0%	0%	0%
Rub-trd Gantry Crane	197	2026	Diesel	0.2	1		0%	279	0%	0%	0%
Top handler	250	2036	Diesel	0.59	8		0%	16,014	0%	0%	0%
Top handler	260	2036	Diesel	0.59	3		0%	6,318	0%	0%	0%
Top handler	260	2038	Diesel	0.59	8		0%	14,753	0%	0%	0%
Top handler	260	2040	Diesel	0.59	15		0%	51,633	0%	0%	0%
Top handler	335	2040	Diesel	0.59	3		0%	9,678	0%	0%	0%
Top handler	370	2040	Diesel	0.59	1		0%	3,290	0%	0%	0%
Yard tractor	195	2044	CNG (ultra-low NOx)	0.39	53		0%	103,154	0%	0%	0%
Yard tractor	195	2044	CNG (ultra-low NOx)	0.39	59		0%	140,503	0%	0%	0%
Yard tractor	195	2036	CNG (ultra-low NOx)	0.39	43		0%	120,228	0%	0%	0%
Yard tractor	231	2036	CNG (ultra-low NOx)	0.39	23		0%	39,408	0%	0%	0%
Sweeper	100	2041	Diesel	0.68	1		0%	1,526	0%	0%	0%
Truck	250	2037	Diesel	0.51	2		0%	2,205	0%	0%	0%
Truck	250	2040	Diesel	0.51	2		0%	3,182	0%	0%	0%
Truck	275	2033	Diesel	0.51	1		0%	1,235	0%	0%	0%

Notes

NA: not available

Quantity is the total number of equipment at WBCT terminal which are used for China Shipping and Yang Ming operations.

Operating Hours are only for China Shipping operations calculated by applying ratio

of China Shipping throughput/total WBCT throughput to average annual hours for WBCT terminal

Data obtained: 3/2/2016

Emissions Control Data

http://rypos.com/wp-content/uploads/RTG-Technology-Information-Package-final.pdf

http://www.epa.gov/cleandiesel/verification/verif-list.htm

Table B1-92. 2045 Proposed Mitigated Scenario - CHE Emission Factor

	Emission Factors (g/hp-hr)								
General name	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O
2045_Forklift_Diesel_137_2038	0.123	3.107	0.275	0.011	0.010	0.010	852.458	0.018	-
2045_Forklift_Diesel_152_2036	0.263	3.917	0.313	0.015	0.014	0.010	852.462	0.025	-
2045_Forklift_Diesel_152_2037	0.131	3.157	0.278	0.011	0.010	0.010	852.437	0.022	-
2045_Forklift_Electric_75_0	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric_160_0	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric_160_0	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric_165_0	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Diesel_197_2035	0.228	1.267	0.304	0.013	0.012	0.010	852.408	0.024	-
2045_Rub-trd Gantry Crane_Diesel_197_2039	0.243	1.296	0.308	0.013	0.012	0.010	852.505	0.014	-
2045_Rub-trd Gantry Crane_Diesel_197_2024	0.264	1.232	0.314	0.014	0.013	0.008	852.132	0.031	-
2045_Rub-trd Gantry Crane_Diesel_197_2022	0.300	1.286	0.324	0.015	0.014	0.009	876.296	0.032	-
2045_Rub-trd Gantry Crane_Diesel_197_2026	0.234	1.187	0.306	0.013	0.012	0.008	828.585	0.030	-
2045_Top handler_Diesel_250_2036	0.249	1.308	0.310	0.014	0.012	0.010	852.875	0.021	-
2045_Top handler_Diesel_260_2036	0.262	1.333	0.313	0.014	0.013	0.008	850.218	0.021	-
2045_Top handler_Diesel_260_2038	0.270	1.348	0.315	0.014	0.013	0.008	852.962	0.016	-
2045_Top handler_Diesel_260_2040	0.388	1.582	0.348	0.017	0.016	0.008	852.777	0.011	-
2045_Top handler_Diesel_335_2040	0.309	1.299	0.326	0.015	0.014	0.008	852.777	0.011	-
2045_Top handler_Diesel_370_2040	0.277	1.252	0.318	0.014	0.013	0.008	852.777	0.011	-
2045_Yard tractor_CNG (ultra-low NOx)_195_2044	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2045_Yard tractor_CNG (ultra-low NOx)_195_2044	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2045_Yard tractor_CNG (ultra-low NOx)_195_2036	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2045_Yard tractor_CNG (ultra-low NOx)_231_2036	0.009	1.500	0.010	0.002	0.002	-	465.000	0.560	-
2045_Sweeper_Diesel_100_2041	0.126	3.530	0.102	0.011	0.010	0.010	852.433	0.015	-
2045_Truck_Diesel_250_2037	0.148	1.107	0.282	0.011	0.010	0.010	852.461	0.018	-
2045_Truck_Diesel_250_2040	0.144	1.100	0.281	0.011	0.010	0.010	852.638	0.011	-
2045_Truck_Diesel_275_2033	0.206	1.223	0.298	0.012	0.011	0.008	854.081	0.028	-

Table B1-93. 2045 Proposed Mitigated Scenario Annual Mass Emissions

		Annual Emissions (tons/year)									
General name	(HP-Hrs)/Yr	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2045_Forklift_Diesel	37,704	0.01	0.13	0.01	0.00	0.00	0.00	35	0.00	-	0.00
2045_Forklift_Diesel	199,607	0.06	0.86	0.07	0.00	0.00	0.00	188	0.01	-	0.00
2045_Forklift_Diesel	82,755	0.01	0.29	0.03	0.00	0.00	0.00	78	0.00	-	0.00
2045_Forklift_Electric	9,277	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	76,530	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	20,005	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	27,622	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Diesel	16,853	0.00	0.02	0.01	0.00	0.00	0.00	16	0.00	-	0.00
2045_Rub-trd Gantry Crane_Diesel	631,983	0.17	0.90	0.21	0.01	0.01	0.01	594	0.01	-	0.01
2045_Rub-trd Gantry Crane_Diesel	82,712	0.02	0.11	0.03	0.00	0.00	0.00	78	0.00	-	0.00
2045_Rub-trd Gantry Crane_Diesel	384,716	0.13	0.55	0.14	0.01	0.01	0.00	372	0.01	-	0.01
2045_Rub-trd Gantry Crane_Diesel	11,008	0.00	0.01	0.00	0.00	0.00	0.00	10	0.00	-	0.00
2045_Top handler_Diesel	2,362,055	0.65	3.41	0.81	0.04	0.03	0.02	2,221	0.05	-	0.04
2045_Top handler_Diesel	969,128	0.28	1.42	0.33	0.01	0.01	0.01	908	0.02	-	0.01
2045_Top handler_Diesel	2,263,034	0.67	3.36	0.79	0.04	0.03	0.02	2,128	0.04	-	0.04
2045_Top handler_Diesel	7,920,571	3.39	13.81	3.04	0.15	0.14	0.07	7,445	0.09	-	0.15
2045_Top handler_Diesel	1,912,931	0.65	2.74	0.69	0.03	0.03	0.02	1,798	0.02	-	0.03
2045_Top handler_Diesel	718,214	0.22	0.99	0.25	0.01	0.01	0.01	675	0.01	-	0.01
2045_Yard tractor_CNG (ultra-low NOx)	7,844,878	0.08	12.97	0.09	0.02	0.02	-	4,021	4.84	-	-
2045_Yard tractor_CNG (ultra-low NOx)	10,685,221	0.11	17.67	0.12	0.02	0.02	-	5,477	6.60	-	-
2045_Yard tractor_CNG (ultra-low NOx)	9,143,315	0.09	15.12	0.10	0.02	0.02	-	4,687	5.64	-	-
2045_Yard tractor_CNG (ultra-low NOx)	3,550,265	0.04	5.87	0.04	0.01	0.01	-	1,820	2.19	-	-
2045_Sweeper_Diesel	103,740	0.01	0.40	0.01	0.00	0.00	0.00	97	0.00	-	0.00
2045_Truck_Diesel	281,109	0.05	0.34	0.09	0.00	0.00	0.00	264	0.01	-	0.00
2045_Truck_Diesel	405,755	0.06	0.49	0.13	0.00	0.00	0.00	381	0.00	-	0.00
2045_Truck_Diesel	173,192	0.04	0.23	0.06	0.00	0.00	0.00	163	0.01	-	0.00

Table B1-94. 2045 Proposed Mitigated Scenario Peak Day Emissions

		Peak Day Emissions (lb/day)									
General name	Peak Day Factor	VOC	CO	NOx	PM10	PM25	SOx	CO2	CH4	N2O	DPM
2045_Forklift_Diesel	0.0040	0.04	1.05	0.09	0.00	0.00	0.00	287	0.01	-	0.00
2045_Forklift_Diesel	0.0040	0.47	6.98	0.56	0.03	0.03	0.02	1,519	0.05	-	0.03
2045_Forklift_Diesel	0.0040	0.10	2.33	0.21	0.01	0.01	0.01	630	0.02	-	0.01
2045_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	0.0040	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Diesel	0.0040	0.03	0.19	0.05	0.00	0.00	0.00	128.24	0.00	-	0.00
2045_Rub-trd Gantry Crane_Diesel	0.0040	1.37	7.31	1.74	0.08	0.07	0.05	4,809.66	0.08	-	0.08
2045_Rub-trd Gantry Crane_Diesel	0.0040	0.20	0.91	0.23	0.01	0.01	0.01	629.20	0.02	-	0.01
2045_Rub-trd Gantry Crane_Diesel	0.0040	1.03	4.42	1.11	0.05	0.05	0.03	3,009.56	0.11	-	0.05
2045_Rub-trd Gantry Crane_Diesel	0.0040	0.02	0.12	0.03	0.00	0.00	0.00	81.43	0.00	-	0.00
2045_Top handler_Diesel	0.0040	5.26	27.58	6.53	0.29	0.26	0.20	17,984.05	0.44	-	0.29
2045_Top handler_Diesel	0.0040	2.27	11.53	2.71	0.12	0.11	0.07	7,355.69	0.18	-	0.12
2045_Top handler_Diesel	0.0040	5.45	27.23	6.37	0.28	0.26	0.17	17,231.88	0.32	-	0.28
2045_Top handler_Diesel	0.0040	27.46	111.86	24.60	1.21	1.11	0.59	60,298.17	0.75	-	1.21
2045_Top handler_Diesel	0.0040	5.28	22.19	5.57	0.26	0.24	0.14	14,562.87	0.18	-	0.26
2045_Top handler_Diesel	0.0040	1.78	8.03	2.04	0.09	0.08	0.05	5,467.66	0.07	-	0.09
2045_Yard tractor_CNG (ultra-low NOx)	0.0040	0.65	105.05	0.70	0.14	0.14	-	32,565.00	39.22	-	-
2045_Yard tractor_CNG (ultra-low NOx)	0.0040	0.89	143.08	0.95	0.19	0.19	-	44,355.59	53.42	-	-
2045_Yard tractor_CNG (ultra-low NOx)	0.0040	0.76	122.44	0.82	0.16	0.16	-	37,954.96	45.71	-	-
2045_Yard tractor_CNG (ultra-low NOx)	0.0040	0.29	47.54	0.32	0.06	0.06	-	14,737.56	17.75	-	-
2045_Sweeper_Diesel	0.0040	0.12	3.27	0.09	0.01	0.01	0.01	789.44	0.01	-	0.01
2045_Truck_Diesel	0.0040	0.37	2.78	0.71	0.03	0.03	0.02	2,139.25	0.05	-	0.03
2045_Truck_Diesel	0.0040	0.52	3.99	1.02	0.04	0.04	0.03	3,088.45	0.04	-	0.04
2045_Truck_Diesel	0.0040	0.32	1.89	0.46	0.02	0.02	0.01	1,320.50	0.04	-	0.02

8hr/24hr Peaking Factor*: 0.529716683

**Note: Using same peaking factor that is applied to trucks*

Table B1-95. 2045 Proposed Mitigated Scenario Eight Hour Peak Emissions

	Eight Hour Peak Emissions (lb/8hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2045_Forklift_Diesel	0.02	0.55	0.05	0.00	0.00	0.00	152	0.00	-	0.00
2045_Forklift_Diesel	0.25	3.70	0.30	0.01	0.01	0.01	805	0.02	-	0.01
2045_Forklift_Diesel	0.05	1.24	0.11	0.00	0.00	0.00	334	0.01	-	0.00
2045_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Diesel	0.02	0.10	0.02	0.00	0.00	0.00	67.93	0.00	-	0.00
2045_Rub-trd Gantry Crane_Diesel	0.73	3.87	0.92	0.04	0.04	0.03	2,547.76	0.04	-	0.04
2045_Rub-trd Gantry Crane_Diesel	0.10	0.48	0.12	0.01	0.01	0.00	333.30	0.01	-	0.01
2045_Rub-trd Gantry Crane_Diesel	0.55	2.34	0.59	0.03	0.02	0.02	1,594.21	0.06	-	0.03
2045_Rub-trd Gantry Crane_Diesel	0.01	0.06	0.02	0.00	0.00	0.00	43.13	0.00	-	0.00
2045_Top handler_Diesel	2.78	14.61	3.46	0.15	0.14	0.11	9,526.45	0.23	-	0.15
2045_Top handler_Diesel	1.20	6.11	1.44	0.06	0.06	0.04	3,896.43	0.09	-	0.06
2045_Top handler_Diesel	2.88	14.42	3.38	0.15	0.14	0.09	9,128.02	0.17	-	0.15
2045_Top handler_Diesel	14.54	59.25	13.03	0.64	0.59	0.31	31,940.95	0.40	-	0.64
2045_Top handler_Diesel	2.80	11.75	2.95	0.14	0.13	0.08	7,714.20	0.10	-	0.14
2045_Top handler_Diesel	0.94	4.25	1.08	0.05	0.04	0.03	2,896.31	0.04	-	0.05
2045_Yard tractor_CNG (ultra-low NOx)	0.35	55.65	0.37	0.07	0.07	-	17,250.22	20.77	-	-
2045_Yard tractor_CNG (ultra-low NOx)	0.47	75.79	0.51	0.10	0.10	-	23,495.90	28.30	-	-
2045_Yard tractor_CNG (ultra-low NOx)	0.40	64.86	0.43	0.09	0.09	-	20,105.38	24.21	-	-
2045_Yard tractor_CNG (ultra-low NOx)	0.16	25.18	0.17	0.03	0.03	-	7,806.73	9.40	-	-
2045_Sweeper_Diesel	0.06	1.73	0.05	0.01	0.00	0.00	418.18	0.01	-	0.01
2045_Truck_Diesel	0.20	1.47	0.37	0.01	0.01	0.01	1,133.20	0.02	-	0.01
2045_Truck_Diesel	0.28	2.11	0.54	0.02	0.02	0.02	1,636.00	0.02	-	0.02
2045_Truck_Diesel	0.17	1.00	0.24	0.01	0.01	0.01	699.49	0.02	-	0.01

1hr/24hr Peaking Factor*: 0.073685169

**Note: Using same peaking factor that is applied to trucks*

Table B1-96. 2045 Proposed Mitigated Scenario One Hour Peak Emissions

	One Hour Peak Emissions (lb/1hr-period)									
General name	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**SOx**	**CO2**	**CH4**	**N2O**	**DPM**
2045_Forklift_Diesel	0.00	0.08	0.01	0.00	0.00	0.00	21	0.00	-	0.00
2045_Forklift_Diesel	0.03	0.51	0.04	0.00	0.00	0.00	112	0.00	-	0.00
2045_Forklift_Diesel	0.01	0.17	0.02	0.00	0.00	0.00	46	0.00	-	0.00
2045_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2045_Forklift_Electric	-	-	-	-	-	-	-	-	-	-
2045_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.00	0.00	0.00	0.00	9.45	0.00	-	0.00
2045_Rub-trd Gantry Crane_Diesel	0.10	0.54	0.13	0.01	0.01	0.00	354.40	0.01	-	0.01
2045_Rub-trd Gantry Crane_Diesel	0.01	0.07	0.02	0.00	0.00	0.00	46.36	0.00	-	0.00
2045_Rub-trd Gantry Crane_Diesel	0.08	0.33	0.08	0.00	0.00	0.00	221.76	0.01	-	0.00
2045_Rub-trd Gantry Crane_Diesel	0.00	0.01	0.00	0.00	0.00	0.00	6.00	0.00	-	0.00
2045_Top handler_Diesel	0.39	2.03	0.48	0.02	0.02	0.01	1,325.16	0.03	-	0.02
2045_Top handler_Diesel	0.17	0.85	0.20	0.01	0.01	0.01	542.01	0.01	-	0.01
2045_Top handler_Diesel	0.40	2.01	0.47	0.02	0.02	0.01	1,269.73	0.02	-	0.02
2045_Top handler_Diesel	2.02	8.24	1.81	0.09	0.08	0.04	4,443.08	0.06	-	0.09
2045_Top handler_Diesel	0.39	1.63	0.41	0.02	0.02	0.01	1,073.07	0.01	-	0.02
2045_Top handler_Diesel	0.13	0.59	0.15	0.01	0.01	0.00	402.89	0.01	-	0.01
2045_Yard tractor_CNG (ultra-low NOx)	0.05	7.74	0.05	0.01	0.01	-	2,399.56	2.89	-	-
2045_Yard tractor_CNG (ultra-low NOx)	0.07	10.54	0.07	0.01	0.01	-	3,268.35	3.94	-	-
2045_Yard tractor_CNG (ultra-low NOx)	0.06	9.02	0.06	0.01	0.01	-	2,796.72	3.37	-	-
2045_Yard tractor_CNG (ultra-low NOx)	0.02	3.50	0.02	0.00	0.00	-	1,085.94	1.31	-	-
2045_Sweeper_Diesel	0.01	0.24	0.01	0.00	0.00	0.00	58.17	0.00	-	0.00
2045_Truck_Diesel	0.03	0.20	0.05	0.00	0.00	0.00	157.63	0.00	-	0.00
2045_Truck_Diesel	0.04	0.29	0.08	0.00	0.00	0.00	227.57	0.00	-	0.00
2045_Truck_Diesel	0.02	0.14	0.03	0.00	0.00	0.00	97.30	0.00	-	0.00

Ocean-Going Vessels (OGVs)

Table B1-97. Ocean Going Vessel Criteria Pollutant Emission Factors by Tier Level for Main Engine and Boilers

Main Engine, Gas Turbine and Boilers	IMO Tier	Model Year	PM10	PM2.5	DPM	NOx	SOx	CO	HC
			gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr	gm/kw-hr
MDO/MGO 0.1% Sulfur									
Slow speed diesel	Tier 0	≤ 1999	0.26	0.24	0.26	17.0	0.39	1.4	0.6
Medium speed diesel	Tier 0	≤ 1999	0.26	0.24	0.26	13.2	0.43	1.1	0.5
Slow speed diesel	Tier 1	2000 – 2010	0.26	0.24	0.26	16.0	0.39	1.4	0.6
Medium speed diesel	Tier 1	2000 – 2010	0.26	0.24	0.26	12.2	0.43	1.1	0.5
Slow speed diesel	Tier 2	2011 – 2015	0.26	0.24	0.26	14.4	0.39	1.4	0.6
Medium speed diesel	Tier 2	2011 – 2015	0.26	0.24	0.26	10.5	0.43	1.1	0.5
Slow speed diesel	Tier 3	≥ 2016	0.26	0.24	0.26	3.4	0.39	1.4	0.6
Medium speed diesel	Tier 3	≥ 2016	0.26	0.24	0.26	2.6	0.43	1.1	0.5
Gas turbine	na	all	0.01	0.01	0.00	5.7	0.61	0.2	0.1
Steamship	na	all	0.14	0.13	0.00	2.0	0.61	0.2	0.1
MDO/MGO 0.08% Sulfur									
Slow speed diesel	Tier 0	≤ 1999	0.255	0.228	0.255	17.0	0.315	1.4	0.6
Medium speed diesel	Tier 0	≤ 1999	0.255	0.228	0.255	13.2	0.345	1.1	0.5
Slow speed diesel	Tier 1	2000 – 2010	0.255	0.228	0.255	16.0	0.315	1.4	0.6
Medium speed diesel	Tier 1	2000 – 2010	0.255	0.228	0.255	12.2	0.345	1.1	0.5
Slow speed diesel	Tier 2	2011 – 2015	0.255	0.228	0.255	14.4	0.315	1.4	0.6
Medium speed diesel	Tier 2	2011 – 2015	0.255	0.228	0.255	10.5	0.345	1.1	0.5
Slow speed diesel	Tier 3	≥ 2016	0.255	0.228	0.255	3.4	0.315	1.4	0.6
Medium speed diesel	Tier 3	≥ 2016	0.255	0.228	0.255	2.6	0.345	1.1	0.5
Gas turbine	na	all	0.01	0.01	0.000	5.7	0.495	0.2	0.1
Steamship	na	all	0.14	0.12	0.000	2.0	0.495	0.2	0.1
MDO/MGO 0.05% Sulfur									
Slow speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	17.0	0.200	1.4	0.6
Medium speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	13.2	0.220	1.1	0.5
Slow speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	16.0	0.200	1.4	0.6
Medium speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	12.2	0.220	1.1	0.5
Slow speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	14.4	0.200	1.4	0.6
Medium speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	10.5	0.220	1.1	0.5
Slow speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	3.4	0.200	1.4	0.6
Medium speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	2.6	0.220	1.1	0.5
Gas turbine	na	all	0.008	0.007	0.000	5.7	0.310	0.2	0.1
Steamship	na	all	0.128	0.115	0.000	2.0	0.310	0.2	0.1
MDO/MGO 0.04% Sulfur									
Slow speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	17.0	0.160	1.4	0.6
Medium speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	13.2	0.170	1.1	0.5
Slow speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	16.0	0.160	1.4	0.6
Medium speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	12.2	0.170	1.1	0.5
Slow speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	14.4	0.160	1.4	0.6
Medium speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	10.5	0.170	1.1	0.5
Slow speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	3.4	0.160	1.4	0.6
Medium speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	2.6	0.170	1.1	0.5
Gas turbine	na	all	0.008	0.007	0.000	5.7	0.250	0.2	0.1
Steamship	na	all	0.128	0.115	0.000	2.0	0.250	0.2	0.1
MDO/MGO 0.03% Sulfur									
Slow speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	17.0	0.116	1.4	0.6
Medium speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	13.2	0.127	1.1	0.5
Slow speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	16.0	0.116	1.4	0.6
Medium speed diesel	Tier 1	2000 – 2010	0.240	0.216	0.240	12.2	0.127	1.1	0.5
Slow speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	14.4	0.116	1.4	0.6
Medium speed diesel	Tier 2	2011 – 2015	0.240	0.216	0.240	10.5	0.127	1.1	0.5
Slow speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	3.4	0.116	1.4	0.6
Medium speed diesel	Tier 3	≥ 2016	0.240	0.216	0.240	2.6	0.127	1.1	0.5
Gas turbine	na	all	0.008	0.01	0.000	5.7	0.182	0.2	0.1
Steamship	na	all	0.128	0.12	0.000	2.0	0.182	0.2	0.1

Source: https://www.portoflosangeles.org/pdf/2014_Air_Emissions_Inventory_Full_Report.pdf

Table B1-98. Ocean Going Vessel Greenhouse Gas Emission Factors by Tier Level for Main Engine and Boilers

Main Engine, Gas Turbine and Boilers	IMO Tier	Model Year	CO2	N2O	CH4
			gm/kw-hr	gm/kw-hr	gm/kw-hr
MDO/MGO 0.1%, 0.05%, 0.04% and 0.03% Sulfur					
Slow speed diesel	Tier 0	≤ 1999	589	0.029	0.012
Medium speed diesel	Tier 0	≤ 1999	649	0.029	0.01
Slow speed diesel	Tier 1	2000 – 2010	589	0.029	0.012
Medium speed diesel	Tier 1	2000 – 2010	649	0.029	0.01
Slow speed diesel	Tier 2	2011 – 2015	589	0.029	0.012
Medium speed diesel	Tier 2	2011 – 2015	649	0.029	0.01
Slow speed diesel	Tier 3	≥ 2016	589	0.029	0.012
Medium speed diesel	Tier 3	≥ 2016	649	0.029	0.01
Gas turbine	na	all	922	0.075	0.002
Steamship	na	all	922	0.075	0.002

Source: https://www.portoflosangeles.org/pdf/2014_Air_Emissions_Inventory_Full_Report.pdf

Table B1-99. Ocean Going Vessel Criteria Greenhouse Gas Emission Factors by Tier Level for Main Engine and Boilers

Auxiliary Engine	IMO Tier	Model Year	PM10 gm/kw-hr	PM2.5 gm/kw-hr	DPM gm/kw-hr	NOx gm/kw-hr	SOx gm/kw-hr	CO gm/kw-hr	HC gm/kw-hr
MDO/MGO 0.1% Sulfur									
High speed diesel	Tier 0	≤ 1999	0.26	0.24	0.26	10.90	0.46	0.90	0.40
Medium speed diesel	Tier 0	≤ 1999	0.26	0.24	0.26	13.80	0.46	1.10	0.40
High speed diesel	Tier 1	2000 – 2010	0.26	0.24	0.26	9.80	0.46	0.90	0.40
Medium speed diesel	Tier 1	2000 – 2010	0.26	0.24	0.26	12.20	0.46	1.10	0.40
High speed diesel	Tier 2	2011 – 2015	0.26	0.24	0.26	7.70	0.46	0.90	0.40
Medium speed diesel	Tier 2	2011 – 2015	0.26	0.24	0.26	10.50	0.46	1.10	0.40
High speed diesel	Tier 3	≥ 2016	0.26	0.24	0.26	2.00	0.46	0.90	0.40
Medium speed diesel	Tier 3	≥ 2016	0.26	0.24	0.26	2.60	0.46	1.10	0.40
MDO/MGO 0.08% Sulfur									
High speed diesel	Tier 0	≤ 1999	0.255	0.228	0.255	10.9	0.369	0.9	0.4
Medium speed diesel	Tier 0	≤ 1999	0.255	0.228	0.255	13.8	0.369	1.1	0.4
High speed diesel	Tier 1	2000 – 2010	0.255	0.228	0.255	9.8	0.369	0.9	0.4
Medium speed diesel	Tier 1	2000 – 2010	0.255	0.228	0.255	12.2	0.369	1.1	0.4
High speed diesel	Tier 2	2011 – 2015	0.255	0.228	0.255	7.7	0.369	0.9	0.4
Medium speed diesel	Tier 2	2011 – 2015	0.255	0.228	0.255	10.5	0.369	1.1	0.4
High speed diesel	Tier 3	≥ 2016	0.255	0.228	0.255	2.0	0.369	0.9	0.4
Medium speed diesel	Tier 3	≥ 2016	0.255	0.228	0.255	2.6	0.369	1.1	0.4
MDO/MGO 0.05% Sulfur									
High speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	10.9	0.234	0.9	0.4
Medium speed diesel	Tier 0	≤ 1999	0.24	0.216	0.240	13.8	0.234	1.1	0.4
High speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	9.8	0.234	0.9	0.4
Medium speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	12.2	0.234	1.1	0.4
High speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	7.7	0.234	0.9	0.4
Medium speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	10.5	0.234	1.1	0.4
High speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.0	0.234	0.9	0.4
Medium speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.6	0.234	1.1	0.4
MDO/MGO 0.04% Sulfur									
High speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	10.9	0.185	0.9	0.4
Medium speed diesel	Tier 0	≤ 1999	0.24	0.216	0.240	13.8	0.185	1.1	0.4
High speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	9.8	0.185	0.9	0.4
Medium speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	12.2	0.185	1.1	0.4
High speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	7.7	0.185	0.9	0.4
Medium speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	10.5	0.185	1.1	0.4
High speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.0	0.185	0.9	0.4
Medium speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.6	0.185	1.1	0.4
MDO/MGO 0.03% Sulfur									
High speed diesel	Tier 0	≤ 1999	0.240	0.216	0.240	10.9	0.135	0.9	0.4
Medium speed diesel	Tier 0	≤ 1999	0.24	0.216	0.240	13.8	0.135	1.1	0.4
High speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	9.8	0.135	0.9	0.4
Medium speed diesel	Tier 1	2000 – 2010	0.24	0.216	0.240	12.2	0.135	1.1	0.4
High speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	7.7	0.135	0.9	0.4
Medium speed diesel	Tier 2	2011 – 2015	0.24	0.216	0.240	10.5	0.135	1.1	0.4
High speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.0	0.135	0.9	0.4
Medium speed diesel	Tier 3	≥ 2016	0.24	0.216	0.240	2.6	0.135	1.1	0.4

Source: https://www.portoflosangeles.org/pdf/2014_Air_Emissions_Inventory_Full_Report.pdf

Table B1-100. Ocean Going Vessel Greenhouse Gas Emission Factors by Tier Level for Auxiliary Engines

Auxiliary Engine	IMO Tier	Model Year	CO2	N2O	CH4
			gm/kw-hr	gm/kw-hr	gm/kw-hr
MDO/MGO 0.1%, 0.05%, 0.04% and 0.03% Sulfur					
High speed diesel	Tier 0	≤ 1999	656	0.029	0.008
Medium speed diesel	Tier 0	≤ 1999	686	0.029	0.008
High speed diesel	Tier 1	2000 – 2010	656	0.029	0.008
Medium speed diesel	Tier 1	2000 – 2010	686	0.029	0.008
High speed diesel	Tier 2	2011 – 2015	656	0.029	0.008
Medium speed diesel	Tier 2	2011 – 2015	686	0.029	0.008
High speed diesel	Tier 3	≥ 2016	656	0.029	0.008
Medium speed diesel	Tier 3	≥ 2016	686	0.029	0.008

Source: https://www.portoflosangeles.org/pdf/2014_Air_Emissions_Inventory_Full_Report.pdf

Table B1-101. Emission Rates Adjustment Factors for MAN Propulsion Engine without Slide Valves

MAN Engines without Slide Valves										
Load	PM	PM2.5	DPM	NOx	SOx	HC	CO	CH4	CO2	N2O
2%	0.83	0.83	0.83	1.86	1.00	2.45	1.36	2.45	1.00	1.86
3%	0.83	0.83	0.83	1.82	1.00	2.37	1.34	2.37	1.00	1.82
4%	0.82	0.82	0.82	1.77	1.00	2.30	1.33	2.30	1.00	1.77
5%	0.82	0.82	0.82	1.72	1.00	2.23	1.31	2.23	1.00	1.72
6%	0.81	0.81	0.81	1.68	1.00	2.16	1.29	2.16	1.00	1.68
7%	0.81	0.81	0.81	1.64	1.00	2.10	1.28	2.10	1.00	1.64
8%	0.80	0.80	0.80	1.60	1.00	2.03	1.26	2.03	1.00	1.60
9%	0.80	0.80	0.80	1.56	1.00	1.97	1.25	1.97	1.00	1.56
10%	0.79	0.79	0.79	1.52	1.00	1.91	1.24	1.91	1.00	1.52
11%	0.79	0.79	0.79	1.49	1.00	1.86	1.22	1.86	1.00	1.49
12%	0.78	0.78	0.78	1.45	1.00	1.80	1.21	1.80	1.00	1.45
13%	0.78	0.78	0.78	1.42	1.00	1.75	1.20	1.75	1.00	1.42
14%	0.78	0.78	0.78	1.39	1.00	1.70	1.19	1.70	1.00	1.39
15%	0.77	0.77	0.77	1.36	1.00	1.65	1.18	1.65	1.00	1.36
16%	0.77	0.77	0.77	1.33	1.00	1.61	1.17	1.61	1.00	1.33
17%	0.77	0.77	0.77	1.30	1.00	1.56	1.16	1.56	1.00	1.30
18%	0.77	0.77	0.77	1.28	1.00	1.52	1.15	1.52	1.00	1.28
19%	0.76	0.76	0.76	1.25	1.00	1.48	1.14	1.48	1.00	1.25
20%	0.76	0.76	0.76	1.23	1.00	1.44	1.13	1.44	1.00	1.23
21%	0.76	0.76	0.76	1.20	1.00	1.41	1.13	1.41	1.00	1.20
22%	0.76	0.76	0.76	1.18	1.00	1.37	1.12	1.37	1.00	1.18
23%	0.76	0.76	0.76	1.16	1.00	1.34	1.11	1.34	1.00	1.16
24%	0.75	0.75	0.75	1.14	1.00	1.31	1.10	1.31	1.00	1.14
25%	0.75	0.75	0.75	1.12	1.00	1.28	1.10	1.28	1.00	1.12
26%	0.75	0.75	0.75	1.11	1.00	1.25	1.09	1.25	1.00	1.11
27%	0.75	0.75	0.75	1.09	1.00	1.22	1.08	1.22	1.00	1.09
28%	0.75	0.75	0.75	1.07	1.00	1.20	1.08	1.20	1.00	1.07
29%	0.75	0.75	0.75	1.06	1.00	1.17	1.07	1.17	1.00	1.06
30%	0.75	0.75	0.75	1.05	1.00	1.15	1.07	1.15	1.00	1.05
31%	0.75	0.75	0.75	1.03	1.00	1.13	1.06	1.13	1.00	1.03
32%	0.75	0.75	0.75	1.02	1.00	1.11	1.06	1.11	1.00	1.02
33%	0.75	0.75	0.75	1.01	1.00	1.09	1.05	1.09	1.00	1.01
34%	0.75	0.75	0.75	1.00	1.00	1.08	1.05	1.08	1.00	1.00
35%	0.76	0.76	0.76	0.99	1.00	1.06	1.04	1.06	1.00	0.99
36%	0.76	0.76	0.76	0.98	1.00	1.05	1.04	1.05	1.00	0.98
37%	0.76	0.76	0.76	0.98	1.00	1.04	1.03	1.04	1.00	0.98
38%	0.76	0.76	0.76	0.97	1.00	1.02	1.03	1.02	1.00	0.97
39%	0.76	0.76	0.76	0.96	1.00	1.01	1.02	1.01	1.00	0.96
40%	0.76	0.76	0.76	0.96	1.00	1.00	1.02	1.00	1.00	0.96
41%	0.77	0.77	0.77	0.95	1.00	0.99	1.01	0.99	1.00	0.95
42%	0.77	0.77	0.77	0.95	1.00	0.99	1.01	0.99	1.00	0.95
43%	0.77	0.77	0.77	0.94	1.00	0.98	1.01	0.98	1.00	0.94
44%	0.78	0.78	0.78	0.94	1.00	0.97	1.00	0.97	1.00	0.94
45%	0.78	0.78	0.78	0.94	1.00	0.97	1.00	0.97	1.00	0.94
46%	0.78	0.78	0.78	0.94	1.00	0.96	0.99	0.96	1.00	0.94
47%	0.79	0.79	0.79	0.94	1.00	0.96	0.99	0.96	1.00	0.94
48%	0.79	0.79	0.79	0.93	1.00	0.96	0.98	0.96	1.00	0.93
49%	0.79	0.79	0.79	0.93	1.00	0.96	0.98	0.96	1.00	0.93
50%	0.80	0.80	0.80	0.93	1.00	0.96	0.98	0.96	1.00	0.93
51%	0.80	0.80	0.80	0.94	1.00	0.95	0.97	0.95	1.00	0.94
52%	0.81	0.81	0.81	0.94	1.00	0.95	0.97	0.95	1.00	0.94
53%	0.81	0.81	0.81	0.94	1.00	0.95	0.96	0.95	1.00	0.94
54%	0.82	0.82	0.82	0.94	1.00	0.95	0.96	0.95	1.00	0.94
55%	0.82	0.82	0.82	0.94	1.00	0.96	0.96	0.96	1.00	0.94
56%	0.83	0.83	0.83	0.94	1.00	0.96	0.95	0.96	1.00	0.94
57%	0.84	0.84	0.84	0.95	1.00	0.96	0.95	0.96	1.00	0.95
58%	0.84	0.84	0.84	0.95	1.00	0.96	0.95	0.96	1.00	0.95
59%	0.85	0.85	0.85	0.95	1.00	0.96	0.94	0.96	1.00	0.95
60%	0.86	0.86	0.86	0.95	1.00	0.97	0.94	0.97	1.00	0.95
61%	0.86	0.86	0.86	0.96	1.00	0.97	0.93	0.97	1.00	0.96
62%	0.87	0.87	0.87	0.96	1.00	0.97	0.93	0.97	1.00	0.96
63%	0.88	0.88	0.88	0.96	1.00	0.98	0.93	0.98	1.00	0.96
64%	0.89	0.89	0.89	0.97	1.00	0.98	0.93	0.98	1.00	0.97
65%	0.89	0.89	0.89	0.97	1.00	0.98	0.92	0.98	1.00	0.97
66%	0.90	0.90	0.90	0.98	1.00	0.99	0.92	0.99	1.00	0.98
67%	0.91	0.91	0.91	0.98	1.00	0.99	0.92	0.99	1.00	0.98
68%	0.92	0.92	0.92	0.98	1.00	0.99	0.91	0.99	1.00	0.98
69%	0.93	0.93	0.93	0.99	1.00	1.00	0.91	1.00	1.00	0.99
70%	0.94	0.94	0.94	0.99	1.00	1.00	0.91	1.00	1.00	0.99
71%	0.94	0.94	0.94	0.99	1.00	1.00	0.91	1.00	1.00	0.99
72%	0.95	0.95	0.95	1.00	1.00	1.01	0.91	1.01	1.00	1.00
73%	0.96	0.96	0.96	1.00	1.00	1.01	0.91	1.01	1.00	1.00
74%	0.97	0.97	0.97	1.00	1.00	1.01	0.91	1.01	1.00	1.00
75%	0.98	0.98	0.98	1.01	1.00	1.01	0.90	1.01	1.00	1.01
76%	0.99	0.99	0.99	1.01	1.00	1.01	0.90	1.01	1.00	1.01
77%	1.00	1.00	1.00	1.01	1.00	1.01	0.90	1.01	1.00	1.01
78%	1.01	1.01	1.01	1.01	1.00	1.01	0.91	1.01	1.00	1.01
79%	1.03	1.03	1.03	1.02	1.00	1.01	0.91	1.01	1.00	1.02
80%	1.04	1.04	1.04	1.02	1.00	1.01	0.91	1.01	1.00	1.02
81%	1.05	1.05	1.05	1.02	1.00	1.01	0.91	1.01	1.00	1.02
82%	1.06	1.06	1.06	1.02	1.00	1.01	0.91	1.01	1.00	1.02
83%	1.07	1.07	1.07	1.02	1.00	1.01	0.92	1.01	1.00	1.02
84%	1.08	1.08	1.08	1.02	1.00	1.00	0.92	1.00	1.00	1.02
85%	1.10	1.10	1.10	1.02	1.00	1.00	0.92	1.00	1.00	1.02
86%	1.11	1.11	1.11	1.02	1.00	0.99	0.93	0.99	1.00	1.02
87%	1.12	1.12	1.12	1.02	1.00	0.99	0.93	0.99	1.00	1.02
88%	1.13	1.13	1.13	1.02	1.00	0.98	0.94	0.98	1.00	1.02
89%	1.15	1.15	1.15	1.01	1.00	0.97	0.95	0.97	1.00	1.01
90%	1.16	1.16	1.16	1.01	1.00	0.97	0.95	0.97	1.00	1.01
91%	1.17	1.17	1.17	1.01	1.00	0.96	0.96	0.96	1.00	1.01
92%	1.19	1.19	1.19	1.00	1.00	0.94	0.97	0.94	1.00	1.00
93%	1.20	1.20	1.20	1.00	1.00	0.93	0.98	0.93	1.00	1.00
94%	1.22	1.22	1.22	0.99	1.00	0.92	0.99	0.92	1.00	0.99
95%	1.23	1.23	1.23	0.99	1.00	0.91	1.01	0.91	1.00	0.99
96%	1.24	1.24	1.24	0.98	1.00	0.89	1.02	0.89	1.00	0.98
97%	1.26	1.26	1.26	0.97	1.00	0.87	1.03	0.87	1.00	0.97
98%	1.28	1.28	1.28	0.97	1.00	0.86	1.05	0.86	1.00	0.97
99%	1.29	1.29	1.29	0.96	1.00	0.84	1.07	0.84	1.00	0.96
100%	1.31	1.31	1.31	0.95	1.00	0.82	1.08	0.82	1.00	0.95

Source: https://www.portoflosangeles.org/pdf/2014_Air_Emissions_Inventory_Full_Report.pdf

Table B1-102. Emission Rates Adjustment Factors for MAN Propulsion Engine with Slide Valves

MAN Engines with Slide Valves										
Load	PM	PM2.5	DPM	NOx	SOx	HC	CO	CH4	CO2	N2O
2%	0.37	0.37	0.37	1.86	1.00	1.32	0.12	1.32	1.00	1.86
3%	0.38	0.38	0.38	1.82	1.00	1.28	0.12	1.28	1.00	1.82
4%	0.38	0.38	0.38	1.78	1.00	1.24	0.12	1.24	1.00	1.78
5%	0.39	0.39	0.39	1.74	1.00	1.20	0.12	1.20	1.00	1.74
6%	0.40	0.40	0.40	1.70	1.00	1.17	0.12	1.17	1.00	1.70
7%	0.41	0.41	0.41	1.67	1.00	1.14	0.12	1.14	1.00	1.67
8%	0.41	0.41	0.41	1.63	1.00	1.11	0.12	1.11	1.00	1.63
9%	0.42	0.42	0.42	1.60	1.00	1.08	0.12	1.08	1.00	1.60
10%	0.43	0.43	0.43	1.57	1.00	1.05	0.12	1.05	1.00	1.57
11%	0.44	0.44	0.44	1.53	1.00	1.02	0.26	1.02	1.00	1.53
12%	0.45	0.45	0.45	1.50	1.00	0.99	0.39	0.99	1.00	1.50
13%	0.45	0.45	0.45	1.47	1.00	0.97	0.52	0.97	1.00	1.47
14%	0.46	0.46	0.46	1.45	1.00	0.94	0.64	0.94	1.00	1.45
15%	0.47	0.47	0.47	1.42	1.00	0.92	0.75	0.92	1.00	1.42
16%	0.48	0.48	0.48	1.39	1.00	0.90	0.85	0.90	1.00	1.39
17%	0.49	0.49	0.49	1.37	1.00	0.88	0.95	0.88	1.00	1.37
18%	0.49	0.49	0.49	1.34	1.00	0.86	1.04	0.86	1.00	1.34
19%	0.50	0.50	0.50	1.32	1.00	0.84	1.12	0.84	1.00	1.32
20%	0.51	0.51	0.51	1.30	1.00	0.82	1.20	0.82	1.00	1.30
21%	0.52	0.52	0.52	1.28	1.00	0.81	1.27	0.81	1.00	1.28
22%	0.53	0.53	0.53	1.26	1.00	0.79	1.34	0.79	1.00	1.26
23%	0.54	0.54	0.54	1.24	1.00	0.78	1.40	0.78	1.00	1.24
24%	0.54	0.54	0.54	1.22	1.00	0.76	1.46	0.76	1.00	1.22
25%	0.55	0.55	0.55	1.20	1.00	0.75	1.51	0.75	1.00	1.20
26%	0.56	0.56	0.56	1.19	1.00	0.74	1.55	0.74	1.00	1.19
27%	0.57	0.57	0.57	1.17	1.00	0.73	1.59	0.73	1.00	1.17
28%	0.58	0.58	0.58	1.16	1.00	0.72	1.63	0.72	1.00	1.16
29%	0.59	0.59	0.59	1.14	1.00	0.71	1.66	0.71	1.00	1.14
30%	0.60	0.60	0.60	1.13	1.00	0.70	1.68	0.70	1.00	1.13
31%	0.60	0.60	0.60	1.12	1.00	0.70	1.70	0.70	1.00	1.12
32%	0.61	0.61	0.61	1.10	1.00	0.69	1.72	0.69	1.00	1.10
33%	0.62	0.62	0.62	1.09	1.00	0.69	1.74	0.69	1.00	1.09
34%	0.63	0.63	0.63	1.08	1.00	0.68	1.75	0.68	1.00	1.08
35%	0.64	0.64	0.64	1.07	1.00	0.68	1.75	0.68	1.00	1.07
36%	0.65	0.65	0.65	1.06	1.00	0.68	1.75	0.68	1.00	1.06
37%	0.66	0.66	0.66	1.05	1.00	0.67	1.75	0.67	1.00	1.05
38%	0.67	0.67	0.67	1.05	1.00	0.67	1.75	0.67	1.00	1.05
39%	0.68	0.68	0.68	1.04	1.00	0.67	1.74	0.67	1.00	1.04
40%	0.69	0.69	0.69	1.03	1.00	0.67	1.73	0.67	1.00	1.03
41%	0.70	0.70	0.70	1.03	1.00	0.67	1.72	0.67	1.00	1.03
42%	0.70	0.70	0.70	1.02	1.00	0.68	1.71	0.68	1.00	1.02
43%	0.71	0.71	0.71	1.02	1.00	0.68	1.69	0.68	1.00	1.02
44%	0.72	0.72	0.72	1.01	1.00	0.68	1.67	0.68	1.00	1.01
45%	0.73	0.73	0.73	1.01	1.00	0.69	1.65	0.69	1.00	1.01
46%	0.74	0.74	0.74	1.00	1.00	0.69	1.62	0.69	1.00	1.00
47%	0.75	0.75	0.75	1.00	1.00	0.70	1.60	0.70	1.00	1.00
48%	0.76	0.76	0.76	1.00	1.00	0.70	1.57	0.70	1.00	1.00
49%	0.77	0.77	0.77	0.99	1.00	0.71	1.54	0.71	1.00	0.99
50%	0.78	0.78	0.78	0.99	1.00	0.71	1.51	0.71	1.00	0.99
51%	0.79	0.79	0.79	0.99	1.00	0.72	1.48	0.72	1.00	0.99
52%	0.80	0.80	0.80	0.99	1.00	0.73	1.45	0.73	1.00	0.99
53%	0.81	0.81	0.81	0.99	1.00	0.74	1.41	0.74	1.00	0.99
54%	0.82	0.82	0.82	0.99	1.00	0.75	1.38	0.75	1.00	0.99
55%	0.83	0.83	0.83	0.98	1.00	0.75	1.35	0.75	1.00	0.98
56%	0.84	0.84	0.84	0.98	1.00	0.76	1.31	0.76	1.00	0.98
57%	0.85	0.85	0.85	0.98	1.00	0.77	1.27	0.77	1.00	0.98
58%	0.86	0.86	0.86	0.98	1.00	0.78	1.24	0.78	1.00	0.98
59%	0.87	0.87	0.87	0.98	1.00	0.80	1.20	0.80	1.00	0.98
60%	0.88	0.88	0.88	0.98	1.00	0.81	1.16	0.81	1.00	0.98
61%	0.89	0.89	0.89	0.98	1.00	0.82	1.13	0.82	1.00	0.98
62%	0.90	0.90	0.90	0.98	1.00	0.83	1.09	0.83	1.00	0.98
63%	0.91	0.91	0.91	0.99	1.00	0.84	1.06	0.84	1.00	0.99
64%	0.92	0.92	0.92	0.99	1.00	0.85	1.02	0.85	1.00	0.99
65%	0.93	0.93	0.93	0.99	1.00	0.87	0.98	0.87	1.00	0.99
66%	0.94	0.94	0.94	0.99	1.00	0.88	0.95	0.88	1.00	0.99
67%	0.95	0.95	0.95	0.99	1.00	0.89	0.92	0.89	1.00	0.99
68%	0.97	0.97	0.97	0.99	1.00	0.91	0.88	0.91	1.00	0.99
69%	0.98	0.98	0.98	0.99	1.00	0.92	0.85	0.92	1.00	0.99
70%	0.99	0.99	0.99	0.99	1.00	0.93	0.82	0.93	1.00	0.99
71%	1.00	1.00	1.00	0.99	1.00	0.95	0.79	0.95	1.00	0.99
72%	1.01	1.01	1.01	0.99	1.00	0.96	0.76	0.96	1.00	0.99
73%	1.02	1.02	1.02	0.99	1.00	0.98	0.74	0.98	1.00	0.99
74%	1.03	1.03	1.03	0.99	1.00	0.99	0.71	0.99	1.00	0.99
75%	1.04	1.04	1.04	0.99	1.00	1.00	0.69	1.00	1.00	0.99
76%	1.05	1.05	1.05	0.99	1.00	1.02	0.66	1.02	1.00	0.99
77%	1.06	1.06	1.06	0.99	1.00	1.03	0.64	1.03	1.00	0.99
78%	1.07	1.07	1.07	0.99	1.00	1.05	0.63	1.05	1.00	0.99
79%	1.09	1.09	1.09	0.99	1.00	1.06	0.61	1.06	1.00	0.99
80%	1.10	1.10	1.10	0.99	1.00	1.08	0.60	1.08	1.00	0.99
81%	1.11	1.11	1.11	0.99	1.00	1.09	0.58	1.09	1.00	0.99
82%	1.12	1.12	1.12	0.99	1.00	1.10	0.57	1.10	1.00	0.99
83%	1.13	1.13	1.13	0.98	1.00	1.12	0.57	1.12	1.00	0.98
84%	1.14	1.14	1.14	0.98	1.00	1.13	0.56	1.13	1.00	0.98
85%	1.15	1.15	1.15	0.98	1.00	1.15	0.56	1.15	1.00	0.98
86%	1.16	1.16	1.16	0.98	1.00	1.16	0.56	1.16	1.00	0.98
87%	1.18	1.18	1.18	0.97	1.00	1.18	0.56	1.18	1.00	0.97
88%	1.19	1.19	1.19	0.97	1.00	1.19	0.57	1.19	1.00	0.97
89%	1.20	1.20	1.20	0.96	1.00	1.20	0.58	1.20	1.00	0.96
90%	1.21	1.21	1.21	0.96	1.00	1.22	0.59	1.22	1.00	0.96
91%	1.22	1.22	1.22	0.95	1.00	1.23	0.61	1.23	1.00	0.95
92%	1.23	1.23	1.23	0.95	1.00	1.24	0.63	1.24	1.00	0.95
93%	1.25	1.25	1.25	0.94	1.00	1.25	0.65	1.25	1.00	0.94
94%	1.26	1.26	1.26	0.93	1.00	1.27	0.67	1.27	1.00	0.93
95%	1.27	1.27	1.27	0.93	1.00	1.28	0.70	1.28	1.00	0.93
96%	1.28	1.28	1.28	0.92	1.00	1.29	0.73	1.29	1.00	0.92
97%	1.29	1.29	1.29	0.91	1.00	1.30	0.77	1.30	1.00	0.91
98%	1.31	1.31	1.31	0.90	1.00	1.31	0.81	1.31	1.00	0.90
99%	1.32	1.32	1.32	0.89	1.00	1.32	0.85	1.32	1.00	0.89
100%	1.33	1.33	1.33	0.88	1.00	1.34	0.90	1.34	1.00	0.88

Source: https://www.portoflosangeles.org/pdf/2014_Air_Emissions_Inventory_Full_Report.pdf

Table B1-103. Emission Factors Fuel Adjustment

Slide Valve	PM	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Yes	1	1	1	1	1	0.59	0.43	1	1	1
No	1	1	1	1	1	0.44	1	1	1	1

Source: https://www.portoflosangeles.org/pdf/2014_Air_Emissions_Inventory_Full_Report.pdf

Table B1-104. Non-MAN Engine Low-Load Adjusments for Emission Factors of OGV Main Propulsion Engines

Variable	PM10	PM2.5	DPM	NOx	SOx	HC	CO
Exponent	1.5	1.5	1.5	1.5	0	1.5	1
Intercept	0.25	0.25	0.25	10.45	0	0.39	0.15
Coefficient	0.006	0.006	0.006	0.126	1.000	0.067	0.838
Ref. EF @ 20% Load	0.316	0.316	0.316	11.853	1.000	1.136	4.339
Factor = Coefficient x Load Factor^-Exponent + Intercept. Factors are normalized by dividing by the factor @ 20% load.							

Source: https://www.portoflosangeles.org/pdf/2014_Air_Emissions_Inventory_Full_Report.pdf

Table B1-105. Vessel Transit Zones and Locations - FEIR Mitigated

Transit Zones	Short Reference	Description
1	Berth	Vessel at Berth
2	Maneuvering	Maneuvering/transit within Harbor
3	PZ	Transit within Precautionary Area
4	20nm	Fairway transit between end of PZ and 20-Mile Boundary
5	40nm	Fairway transit between 20-Mile to Overwater Boundary
Anchorage	Anchorage	Anchorage

Table B1-106. Annual Average Cargo Vessel Activities - FEIR Mitigated

	Annual								
Project Scenario/Ship Type	Annual total transits	No. of tugs per call	Number of Arrivals	Number of Departures	Number of Anchorage Calls	Anchorage Time (hr/call)	NonAMP'd Vessel Hotelling Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime
Base Year 2008	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	0%	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-		
Containerships 8,000 - 9,000 TEU	4	2.0	2	2	1	2	84	100%	5.14
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-		
Containerships 5,000 - 6,000 TEU	28	2.0	14	14	-	-	61	89%	3.42
Containerships 4,000 - 5,000 TEU	18	2.0	9	9	2	6	59	0.89	
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	1	2.0	0.5	0.5	-	-	54.5	-	3.0
Containerships 1,000 - 2,000 TEU	0	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-
Total	51	-	26	26	3	-	-	0.9	-
Project Year 2012	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	0%	-
Containerships 9,000 - 10,000 TEU	42	2.0	21	21	2	22	75		
Containerships 8,000 - 9,000 TEU	9	2.0	5	5	-	-	73	100%	3.94
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-		
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	0%	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-
Total	1	2.0	-	1	-	-	-	-	-
Project Year 2014	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000 TEU	63	2.0	31	32	7	146	109	100%	6.30
Containerships 9,000 - 10,000 TEU	14	2.0	7	7	2	45	99	100%	-
Containerships 8,000 - 9,000 TEU	67	2.0	33	34	6	95	61	100%	6.00
Containerships 6,000 - 7,000 TEU	17	2.0	8	9	-	-	49	100%	3.40
Containerships 5,000 - 6,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	2	2.0	1	1	-	-	34	100%	2.80
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-
Project Year 2018	-	-	-	-	-	-	-	-	-
Containerships 11,000 - 12,000 TEU	4	2.0	2	2	-	-	157	100%	4.20
Containerships 10,000 - 11,000 TEU	4	2.0	2	2	-	-	118		
Containerships 9,000 - 10,000 TEU	4	2.0	2	2	-	-	108	100%	9.90
Containerships 8,000 - 9,000 TEU	40	2.0	20	20	-	-	86		
Containerships 7,000 - 8,000 TEU	12	2.0	6	6	-	-	77	100%	5.68
Containerships 6,000 - 7,000 TEU	108	2.0	54	54	5	4	75	1.00	
Containerships 5,000 - 6,000 TEU	12	2.0	6.0	6.0	-	-	64.0	1.00	3.7
Containerships 4,000 - 5,000 TEU	96	2.0	48.0	48.0	1.0	10.2	37.0	1.0	6.6
Containerships 3,000 - 4,000 TEU	0	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-
Total	280	2.0	140	140	6	4.7	90.2	1.0	5.7
Project Year 2023	-	-	-	-	-	-	-	-	-
Containerships 12,000 - 13,000 TEU	104	2.0	52	52	4	7	41	100%	6.30
Containerships 9,000 - 10,000 TEU	-	2.0	-	-	-	-	-		
Containerships 8,000 - 9,000 TEU	104	2.0	52	52	4	7	35	100%	6.00
Containerships 7,000 - 8,000 TEU	-	2.0	-	-	-	-	-		
Containerships 5,000 - 6,000 TEU	104	2.0	52	52	4	7	31	1.00	3.10
Containerships 4,000 - 5,000 TEU	-	2.0	-	-	-	-	-		
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	312	-	-	-	-	-	-	-	-
Project Year 2030	-	-	-	-	-	-	-	-	-
Containerships 12,000 - 13,000 TEU	104	2.0	52	52	4	7	40	100%	6.30
Containerships 9,000 - 10,000 TEU	104	2.0	52	52	4	7	34	100%	6.15
Containerships 8,000 - 9,000 TEU	-	2.0	-	-	-	-	-		
Containerships 7,000 - 8,000 TEU	104	2.0	52	52	4	7	34	100%	3.40
Containerships 5,000 - 6,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	2.0	-	-	-	-	-		
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	312	-	-	-	-	-	-	-	-
Project Year 2036	-	-	-	-	-	-	-	-	-
Containerships 12,000 - 13,000 TEU	104	2.0	52	52	4	7	40	100%	6.30
Containerships 9,000 - 10,000 TEU	104	2.0	52	52	4	7	34	100%	6.15
Containerships 8,000 - 9,000 TEU	-	2.0	-	-	-	-	-		
Containerships 7,000 - 8,000 TEU	104	2.0	52	52	4	7	34	100%	3.40
Containerships 5,000 - 6,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	2.0	-	-	-	-	-		
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	312	-	-	-	-	-	-	-	-
Project Year 2045	-	-	-	-	-	-	-	-	-
Containerships 12,000 - 13,000 TEU	104	2.0	52	52	4	7	40	100%	6.30
Containerships 9,000 - 10,000 TEU	104	2.0	52	52	4	7	34	100%	6.15
Containerships 8,000 - 9,000 TEU	-	2.0	-	-	-	-	-		
Containerships 7,000 - 8,000 TEU	104	2.0	52	52	4	7	34	100%	3.40
Containerships 5,000 - 6,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	2.0	-	-	-	-	-		
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	312	-	-	-	-	-	-	-	-

Table B1-107. Transit Parameters - FEIR Mitigated

	Maneuvering	PZ	20nm	40nm
Parameter	**2**	**3**	**4**	**5**
Base Year 2008				
Average Speed	5	11	10.96	15.38
AverageTime	1.1	0.7	2.0	1.4
VRSP Compliant Average Speed (knots)	NA	NA	10.76	10.88
VRSP Non-Compliant Average Speed (knots)	NA	NA	13.65	17.60
VSRP Compliance Rate (% transits)	NA	NA	97%	24%
Distance in miles (from CS DEIR 2008)	3.9	8.2	15.8	24.1
Project Year 2012				
Average Speed	5	11	11.04	14.30
AverageTime	1.1	0.8	1.9	1.6
VRSP Compliant Average Speed (knots)	NA	NA	10.64	10.31
VRSP Non-Compliant Average Speed (knots)	NA	NA	13.00	16.58
VSRP Compliance Rate (% transits)	NA	NA	100%	100%
Distance in miles (from CS DEIR 2008)	3.9	8.2	15.8	24.1
Project Year 2014				
Average Speed	7.5	11	11.02	11.15
AverageTime	1.0	0.7	0.7	0.5
VRSP Compliant Average Speed (knots)	NA	NA	11.00	11.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	15.00	15.00
VSRP Compliance Rate (% transits)	NA	NA	99%	96%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1
Project Year 2018				
Average Speed	6.5	9	10.44	10.96
AverageTime	0.6	0.9	1.5	2.2
VRSP Compliant Average Speed (knots)	NA	NA	10.32	10.57
VRSP Non-Compliant Average Speed (knots)	NA	NA	13.13	15.14
VSRP Compliance Rate (% transits)	NA	NA	100%	100%
Distance in miles (from CS DEIR 2008)	3.9	8.2	15.8	24.1
Project Year 2023				
Average Speed	7.5	11	12.51	13.86
AverageTime	not used	not used	not used	not used
VRSP Compliant Average Speed (knots)	NA	NA	12.00	12.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	22.00	22.00
VSRP Compliance Rate (% transits)	NA	NA	100%	100%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1
Project Year 2030				
Average Speed	7.5	11	12.51	13.86
AverageTime	not used	not used	not used	not used
VRSP Compliant Average Speed (knots)	7.5	11	12.00	12.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	22.00	22.00
VSRP Compliance Rate (% transits)	NA	NA	100%	100%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1
Project Year 2036				
Average Speed	7.5	11	12.51	13.86
AverageTime	not used	not used	not used	not used
VRSP Compliant Average Speed (knots)	7.5	11	12.00	12.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	22.00	22.00
VSRP Compliance Rate (% transits)	NA	NA	100%	100%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1
Project Year 2045				
Average Speed	7.5	11	12.51	13.86
AverageTime	not used	not used	not used	not used
VRSP Compliant Average Speed (knots)	7.5	11	12.00	12.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	22.00	22.00
VSRP Compliance Rate (% transits)	NA	NA	100%	100%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1

Table B1-108. Peak Day Activity for Ocean Going Vessels - FEIR Mitigated

			Peak Day	Peak Day	Total	Peak Day Berthing		Anchorage	
Vessel Bin	Vessel Type	Year	Arrival	Departure	Transits in 24hr	Hotelling Hrs (no AMP)	Berthing Hrs (mitigated w/ AMP)	Anchorage_Hotelling	Shift
Base Year 2008									
Containerships 5,000 - 6,000 TEU	5000	2008	0	1	1	23	23	0	0
Project Year 2012									
Containerships 9,000 - 10,000 TEU	9000	2012	0	1	1	23	1.97	0	0
Project Year 2014									
Containerships 10,000 - 11,000 TEU	10000	2014	1	1	2	6.3	17.5	0	0
Containerships 9,000 - 10,000 TEU	9000	2014	0	0	0	24	0	24	0
Project Year 2018									
Containerships 9,000 - 10,000 TEU	9000	2018	0	1	1	24	0	0	0
Containerships 6,000 - 7,000 TEU	6000	2018	1	1	2	24	6.09	4.70	1
Project Year 2023									
Containerships 12,000 - 13,000 TEU	12000	2023	0	1	1	3.15	14.85	0	0
Containerships 5,000 - 6,000 TEU	5000	2023	0	1	1	1.55	16.75	0	0
Containerships 8,000 - 9,000 TEU	8000	2023	1	0	1	3	0	5.5	1
Project Year 2030									
Containerships 7,000 - 8,000 TEU	7000	2030	0	1	1	1.7	10.43	0	0
Containerships 12,000 - 13,000 TEU	12000	2030	0	1	1	3.15	16.02	0	0
Containerships 9,000 - 10,000 TEU	9000	2030	1	0	1	3.075	3.255	7.39	1
Project Year 2036									
Containerships 7,000 - 8,000 TEU	7000	2036	0	1	1	1.7	10.43	0	0
Containerships 12,000 - 13,000 TEU	12000	2036	0	1	1	3.15	16.02	0	0
Containerships 9,000 - 10,000 TEU	9000	2036	1	0	1	3.075	3.255	7.39	1
Project Year 2045									
Containerships 7,000 - 8,000 TEU	7000	2045	0	1	1	1.7	10.43	0	0
Containerships 12,000 - 13,000 TEU	12000	2045	0	1	1	3.15	16.02	0	0
Containerships 9,000 - 10,000 TEU	9000	2045	1	0	1	3.075	3.255	7.39	1

Table B1-109. Engine Loads by Zone for 2008 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 2,000 - 3,000 TEU	-	937	393
	Containerships 4,000 - 5,000 TEU	-	1,188	519
	Containerships 5,000 - 6,000 TEU	-	991	590
	Containerships 8,000 - 9,000 TEU	-	1,080	586
Manuevering	Containerships 2,000 - 3,000 TEU	861	1,973	393
	Containerships 4,000 - 5,000 TEU	1,082	2,524	519
	Containerships 5,000 - 6,000 TEU	1,329	3,427	590
	Containerships 8,000 - 9,000 TEU	1,652	3,480	586
Precautionary Area	Containerships 2,000 - 3,000 TEU	2,680	888	393
	Containerships 4,000 - 5,000 TEU	3,477	1,410	519
	Containerships 5,000 - 6,000 TEU	4,237	1,029	590
	Containerships 8,000 - 9,000 TEU	5,836	1,560	586
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 2,000 - 3,000 TEU	2,506	888	262
	Containerships 4,000 - 5,000 TEU	3,251	1,410	502
	Containerships 5,000 - 6,000 TEU	3,962	1,029	587
	Containerships 8,000 - 9,000 TEU	5,457	1,560	586
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 2,000 - 3,000 TEU	5,121	888	262
	Containerships 4,000 - 5,000 TEU	6,644	1,410	502
	Containerships 5,000 - 6,000 TEU	8,096	1,029	587
	Containerships 8,000 - 9,000 TEU	11,152	1,560	586
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 2,000 - 3,000 TEU	2,590	888	49
	Containerships 4,000 - 5,000 TEU	3,360	1,410	260
	Containerships 5,000 - 6,000 TEU	4,094	1,029	387
	Containerships 8,000 - 9,000 TEU	5,639	1,560	410
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 2,000 - 3,000 TEU	10,976	888	49
	Containerships 4,000 - 5,000 TEU	14,240	1,410	260
	Containerships 5,000 - 6,000 TEU	17,352	1,029	387
	Containerships 8,000 - 9,000 TEU	23,901	1,560	410
Anchorage	Containerships 2,000 - 3,000 TEU	-	-	-
	Containerships 4,000 - 5,000 TEU	-	1,292	519
	Containerships 5,000 - 6,000 TEU	-	-	-
	Containerships 8,000 - 9,000 TEU	-	1,560	586

Table B1-110. Engine Loads by Zone for 2012 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 8,000 - 9,000 TEU	-	927	525
	Containerships 9,000 - 10,000 TEU	-	1,040	547
Manuevering	Containerships 8,000 - 9,000 TEU	1,860	2,785	525
	Containerships 9,000 - 10,000 TEU	1,822	3,350	547
Precautionary Area	Containerships 8,000 - 9,000 TEU	5,790	1,515	525
	Containerships 9,000 - 10,000 TEU	5,699	1,502	547
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 8,000 - 9,000 TEU	5,237	1,515	525
	Containerships 9,000 - 10,000 TEU	5,155	1,502	532
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 8,000 - 9,000 TEU	5,237	1,515	525
	Containerships 9,000 - 10,000 TEU	5,155	1,502	532
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 8,000 - 9,000 TEU	4,771	1,515	225
	Containerships 9,000 - 10,000 TEU	4,696	1,502	321
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 8,000 - 9,000 TEU	4,771	1,515	225
	Containerships 9,000 - 10,000 TEU	4,696	1,502	321
Anchorage	Containerships 8,000 - 9,000 TEU	-	-	-
	Containerships 9,000 - 10,000 TEU	-	1,502	547

Table B1-111. Engine Loads by Zone for 2014 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 10,000 - 11,000 TEU	-	1,131	708
	Containerships 4,000 - 5,000 TEU	-	1,161	492
	Containerships 6,000 - 7,000 TEU	-	990	573
	Containerships 8,000 - 9,000 TEU	-	1,453	531
	Containerships 9,000 - 10,000 TEU	-	1,037	475
Manuevering	Containerships 10,000 - 11,000 TEU	1,868	2,105	708
	Containerships 4,000 - 5,000 TEU	1,122	2,526	492
	Containerships 6,000 - 7,000 TEU	1,604	2,197	573
	Containerships 8,000 - 9,000 TEU	1,783	2,993	531
	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
Precautionary Area	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Anchorage	Containerships 10,000 - 11,000 TEU	-	1,557	708
	Containerships 4,000 - 5,000 TEU	-	-	-
	Containerships 6,000 - 7,000 TEU	-	-	-
	Containerships 8,000 - 9,000 TEU	-	1,470	531
	Containerships 9,000 - 10,000 TEU	-	1,501	475

Table B1-112. Engine Loads by Zone for 2018 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 4,000 - 5,000 TEU	-	1,161	492
	Containerships 5,000 - 6,000 TEU	-	1,028	629
	Containerships 8,000 - 9,000 TEU	-	1,453	531
	Containerships 9,000 - 10,000 TEU	-	1,037	475
	Containerships 6,000 - 7,000 TEU	-	990	573
	Containerships 10,000 - 11,000 TEU	-	1,131	708
	Containerships 7,000 - 8,000 TEU	-	2,456	623
	Containerships 11,000 - 12,000 TEU	-	1,500	790
Manuevering	Containerships 4,000 - 5,000 TEU	1,186	2,526	492
	Containerships 5,000 - 6,000 TEU	996	3,807	629
	Containerships 8,000 - 9,000 TEU	1,783	2,993	531
	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
	Containerships 6,000 - 7,000 TEU	1,604	2,197	573
	Containerships 10,000 - 11,000 TEU	1,868	2,105	708
	Containerships 7,000 - 8,000 TEU	1,303	3,086	470
	Containerships 11,000 - 12,000 TEU	2,600	3,500	575
Precautionary Area	Containerships 4,000 - 5,000 TEU	3,691	1,434	492
	Containerships 5,000 - 6,000 TEU	2,279	1,278	629
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 7,000 - 8,000 TEU	2,982	1,107	259
	Containerships 11,000 - 12,000 TEU	5,950	2,500	330
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 4,000 - 5,000 TEU	5,569	1,434	492
	Containerships 5,000 - 6,000 TEU	3,438	1,278	629
	Containerships 8,000 - 9,000 TEU	8,321	1,597	531
	Containerships 9,000 - 10,000 TEU	8,478	1,501	475
	Containerships 6,000 - 7,000 TEU	7,602	1,453	573
	Containerships 10,000 - 11,000 TEU	8,804	1,730	708
	Containerships 7,000 - 8,000 TEU	4,500	1,107	259
	Containerships 11,000 - 12,000 TEU	8,977	2,500	330
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 4,000 - 5,000 TEU	5,569	1,434	492
	Containerships 5,000 - 6,000 TEU	3,438	1,278	629
	Containerships 8,000 - 9,000 TEU	8,321	1,597	531
	Containerships 9,000 - 10,000 TEU	8,478	1,501	475
	Containerships 6,000 - 7,000 TEU	7,602	1,453	573
	Containerships 10,000 - 11,000 TEU	8,804	1,730	708
	Containerships 7,000 - 8,000 TEU	4,500	1,107	259
	Containerships 11,000 - 12,000 TEU	8,977	2,500	330
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 4,000 - 5,000 TEU	5,974	1,434	464
	Containerships 5,000 - 6,000 TEU	3,688	1,278	381
	Containerships 8,000 - 9,000 TEU	8,926	1,597	531
	Containerships 9,000 - 10,000 TEU	9,095	1,501	475
	Containerships 6,000 - 7,000 TEU	8,155	1,453	573
	Containerships 10,000 - 11,000 TEU	9,445	1,730	708
	Containerships 7,000 - 8,000 TEU	4,827	1,107	259
	Containerships 11,000 - 12,000 TEU	9,630	2,500	330
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 4,000 - 5,000 TEU	5,974	1,434	464
	Containerships 5,000 - 6,000 TEU	3,688	1,278	381
	Containerships 8,000 - 9,000 TEU	8,926	1,597	531
	Containerships 9,000 - 10,000 TEU	9,095	1,501	475
	Containerships 6,000 - 7,000 TEU	8,155	1,453	573
	Containerships 10,000 - 11,000 TEU	9,445	1,730	708
	Containerships 7,000 - 8,000 TEU	4,827	1,107	259
	Containerships 11,000 - 12,000 TEU	9,630	2,500	330
Anchorage	Containerships 4,000 - 5,000 TEU	-	1,200	472
	Containerships 6,000 - 7,000 TEU	-	1,645	611

Table B1-113. Engine Loads by Zone for 2023 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 5,000 - 6,000 TEU	-	900	547
	Containerships 8,000 - 9,000 TEU	-	1,453	531
	Containerships 12,000 - 13,000 TEU	-	982	599
Manuevering	Containerships 5,000 - 6,000 TEU	1,363	3,367	547
	Containerships 8,000 - 9,000 TEU	1,783	2,993	531
	Containerships 12,000 - 13,000 TEU	1,953	3,085	599
Precautionary Area	Containerships 5,000 - 6,000 TEU	4,266	1,725	545
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 12,000 - 13,000 TEU	6,156	1,865	599
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 5,000 - 6,000 TEU	5,539	1,725	545
	Containerships 8,000 - 9,000 TEU	7,160	1,597	531
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 5,000 - 6,000 TEU	5,539	1,725	545
	Containerships 8,000 - 9,000 TEU	7,160	1,597	531
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 5,000 - 6,000 TEU	5,539	1,725	545
	Containerships 8,000 - 9,000 TEU	7,160	1,597	531
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 5,000 - 6,000 TEU	5,539	1,725	545
	Containerships 8,000 - 9,000 TEU	7,160	1,597	531
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
Anchorage	Containerships 5,000 - 6,000 TEU	-	1,725	547
	Containerships 8,000 - 9,000 TEU	-	1,470	531
	Containerships 12,000 - 13,000 TEU	-	1,865	599

Table B1-114. Engine Loads by Zone for 2030 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 9,000 - 10,000 TEU	-	1,037	475
	Containerships 12,000 - 13,000 TEU	-	982	599
	Containerships 7,000 - 8,000 TEU	-	1,372	551
Manuevering	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
	Containerships 12,000 - 13,000 TEU	1,953	3,085	599
	Containerships 7,000 - 8,000 TEU	1,694	3,357	551
Precautionary Area	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
	Containerships 12,000 - 13,000 TEU	6,156	1,865	599
	Containerships 7,000 - 8,000 TEU	5,277	1,444	538
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Anchorage	Containerships 9,000 - 10,000 TEU	-	1,501	475
	Containerships 12,000 - 13,000 TEU	-	1,865	599
	Containerships 7,000 - 8,000 TEU	-	1,444	551

Table B1-115. Engine Loads by Zone for 2036 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 9,000 - 10,000 TEU	-	1,037	475
	Containerships 12,000 - 13,000 TEU	-	982	599
	Containerships 7,000 - 8,000 TEU	-	1,372	551
Manuevering	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
	Containerships 12,000 - 13,000 TEU	1,953	3,085	599
	Containerships 7,000 - 8,000 TEU	1,694	3,357	551
Precautionary Area	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
	Containerships 12,000 - 13,000 TEU	6,156	1,865	599
	Containerships 7,000 - 8,000 TEU	5,277	1,444	538
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Anchorage	Containerships 9,000 - 10,000 TEU	-	1,501	475
	Containerships 12,000 - 13,000 TEU	-	1,865	599
	Containerships 7,000 - 8,000 TEU	-	1,444	551

Table B1-116. Engine Loads by Zone for 2045 - FEIR Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 9,000 - 10,000 TEU	-	1,037	475
	Containerships 12,000 - 13,000 TEU	-	982	599
	Containerships 7,000 - 8,000 TEU	-	1,372	551
Manuevering	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
	Containerships 12,000 - 13,000 TEU	1,953	3,085	599
	Containerships 7,000 - 8,000 TEU	1,694	3,357	551
Precautionary Area	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
	Containerships 12,000 - 13,000 TEU	6,156	1,865	599
	Containerships 7,000 - 8,000 TEU	5,277	1,444	538
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Anchorage	Containerships 9,000 - 10,000 TEU	-	1,501	475
	Containerships 12,000 - 13,000 TEU	-	1,865	599
	Containerships 7,000 - 8,000 TEU	-	1,444	551

Table B1-117. Annual OGVs Emissions in TPY for year 2008 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2008	anchorage	0.05	0.04	0.04	0.46	0.42	0.03	0.04	0.00	26.49	0.00
	hotelling	1.18	0.94	0.39	5.86	19.34	0.22	0.51	0.00	1162.11	0.09
	transit	2.78	2.22	2.68	48.46	23.39	2.39	3.45	0.02	1413.80	0.08
Grand Total		**4.00**	**3.20**	**3.11**	**54.78**	**43.14**	**2.63**	**4.00**	**0.03**	**2602.41**	**0.17**

Table B1-118. Peak Daily OGVs Emissions in tons/day for year 2008 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2008	Fairway: AQMD Overwater Boundary to 20-Mile - Without \	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: 20-Mile to Precautionary Area - Without VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: 20-Mile to Precautionary Area - With VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Precautionary Area	0.00	0.00	0.00	0.04	0.00	0.00	0.02	0.00	0.95	0.00
	Manuevering	0.00	0.01	0.02	0.17	0.01	0.01	0.05	0.00	3.31	0.00
	Anchorage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Berthing	0.03	0.03	0.01	0.35	0.04	0.04	0.51	0.00	32.49	0.00
Grand Total		**0.04**	**0.04**	**0.03**	**0.57**	**0.05**	**0.04**	**0.58**	**0.00**	**36.75**	**0.00**

Table B1-119. Annual OGVs Emissions in TPY for year 2012 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2012	anchorage	0.03	0.03	0.03	1.05	0.17	0.05	0.11	0.00	76.45	0.00
	hotelling	0.23	0.22	0.15	3.65	2.23	0.44	1.02	0.00	1124.14	0.09
	transit	0.96	0.89	0.95	44.19	2.55	3.57	5.40	0.02	1291.05	0.07
Grand Total		**1.22**	**1.13**	**1.13**	**48.89**	**4.95**	**4.07**	**6.53**	**0.03**	**2491.64**	**0.16**

Table B1-120. Peak Daily OGVs Emissions in tons/day for year 2012 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2012	Fairway: AQMD Overwater Boundary to 20-Mile - Without \	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: 20-Mile to Precautionary Area - Without VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: 20-Mile to Precautionary Area - With VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Precautionary Area	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.00	1.18	0.00
	Manuevering	0.02	0.00	0.01	0.12	0.00	0.00	0.01	0.00	3.33	0.00
	Anchorage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Berthing	0.01	0.00	0.01	0.06	0.00	0.00	0.03	0.00	14.33	0.00
Grand Total		**0.04**	**0.01**	**0.02**	**0.21**	**0.01**	**0.01**	**0.04**	**0.00**	**18.85**	**0.00**

Table B1-121. Annual OGVs Emissions in TPY for year 2014 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2014	anchorage	3.40	0.74	1.29	34.34	0.90	0.82	1.85	0.03	3052.56	0.17
	hotelling	1.57	0.16	0.69	15.97	0.78	0.71	2.71	0.01	4567.01	0.36
	transit	4.96	1.20	4.36	131.20	1.28	1.16	2.45	0.09	4314.33	0.29
Grand Total		**9.93**	**2.10**	**6.34**	**181.51**	**2.95**	**2.69**	**7.02**	**0.13**	**11933.91**	**0.82**

Table B1-122. Peak Daily OGVs Emissions in tons/day for year 2014 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2014	Fairway: AQMD Overwater Boundary to 20-Mile	0.03	0.01	0.03	0.59	0.01	0.01	0.02	0.00	25.49	0.00
	Fairway: 20-Mile to Precautionary Area	0.03	0.01	0.03	0.60	0.01	0.01	0.01	0.00	21.84	0.00
	Precautionary Area	0.02	0.00	0.02	0.37	0.00	0.00	0.01	0.00	13.06	0.00
	Manuevering	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	3.29	0.00
	Anchorage	0.05	0.01	0.02	0.44	0.01	0.01	0.01	0.00	38.82	0.00
	Berthing	0.01	0.00	0.01	0.14	0.01	0.01	0.02	0.00	34.08	0.00
Grand Total		**0.14**	**0.03**	**0.10**	**2.23**	**0.04**	**0.04**	**0.07**	**0.00**	**136.58**	**0.01**

Table B1-123. Annual OGVs Emissions in TPY for year 2018 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2018	anchorage	0.02	0.02	0.02	0.91	0.04	0.05	0.07	0.00	53.82	0.00
	hotelling	1.07	0.99	0.28	23.96	3.96	1.00	2.31	0.02	5968.39	0.46
	transit	3.05	2.81	2.93	277.44	5.55	14.86	19.52	0.14	8355.12	0.52
Grand Total		**4.14**	**3.82**	**3.22**	**302.31**	**9.54**	**15.91**	**21.90**	**0.16**	**14377.33**	**0.98**

Table B1-124. Peak Daily OGVs Emissions in tons/day for year 2018 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2018	Fairway: AQMD Overwater Boundary to 20-Mile - Without \	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	0.01	0.00	0.03	0.45	0.00	0.00	0.01	0.00	9.22	0.00
	Fairway: 20-Mile to Precautionary Area - Without VSR	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	1.82	0.00
	Fairway: 20-Mile to Precautionary Area - With VSR	0.01	0.00	0.02	0.35	0.00	0.00	0.01	0.00	7.54	0.00
	Precautionary Area	0.01	0.00	0.02	0.37	0.00	0.00	0.01	0.00	9.04	0.00
	Manuevering	0.01	0.00	0.05	0.48	0.00	0.00	0.01	0.00	8.06	0.00
	Anchorage	0.03	0.01	0.03	0.44	0.01	0.01	0.01	0.00	21.41	0.00
	Berthing	0.01	0.00	0.01	0.13	0.01	0.01	0.02	0.00	30.00	0.00
Grand Total		**0.08**	**0.02**	**0.16**	**2.29**	**0.03**	**0.02**	**0.06**	**0.00**	**87.09**	**0.01**

Table B1-125. Annual OGVs Emissions in TPY for year 2023 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2023	anchorage	0.27	0.06	0.12	2.73	0.06	0.06	0.13	0.00	189.86	0.01
	hotelling	1.80	0.26	0.75	18.63	0.74	0.69	2.56	0.01	3853.50	0.29
	transit	14.76	2.87	8.36	257.94	2.99	2.76	5.77	0.15	8684.19	0.54
Grand Total		**16.82**	**3.19**	**9.23**	**279.30**	**3.80**	**3.51**	**8.45**	**0.17**	**12727.55**	**0.84**

Table B1-126. Peak Daily OGVs Emissions in tons/day for year 2023 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2023	Fairway: AQMD Overwater Boundary to 20-Mile	0.04	0.01	0.02	0.81	0.01	0.01	0.02	0.00	27.16	0.00
	Fairway: 20-Mile to Precautionary Area	0.06	0.01	0.03	1.06	0.01	0.01	0.02	0.00	35.57	0.00
	Precautionary Area	0.03	0.01	0.02	0.45	0.01	0.00	0.01	0.00	15.10	0.00
	Manuevering	0.02	0.00	0.01	0.15	0.00	0.00	0.00	0.00	5.67	0.00
	Anchorage	0.01	0.00	0.00	0.17	0.00	0.00	0.01	0.00	11.23	0.00
	Berthing	0.02	0.00	0.01	0.16	0.01	0.01	0.02	0.00	29.43	0.00
Grand Total		**0.17**	**0.03**	**0.09**	**2.81**	**0.04**	**0.04**	**0.08**	**0.00**	**124.16**	**0.01**

Table B1-127. Annual OGVs Emissions in TPY for year 2030 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2030	anchorage	0.34	0.06	0.18	2.42	0.07	0.07	0.12	0.00	182.99	0.01
	hotelling	1.76	0.26	0.73	16.46	0.73	0.67	2.50	0.01	3770.97	0.28
	transit	32.92	4.67	16.25	203.15	4.79	4.42	5.93	0.15	8929.55	0.45
Grand Total		**35.01**	**4.99**	**17.17**	**222.03**	**5.59**	**5.16**	**8.55**	**0.17**	**12883.51**	**0.74**

Table B1-128. Peak Daily OGVs Emissions in tons/day for year 2030 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2030	Fairway: AQMD Overwater Boundary to 20-Mile	0.04	0.01	0.02	0.81	0.01	0.01	0.02	0.00	27.16	0.00
	Fairway: 20-Mile to Precautionary Area	0.06	0.01	0.03	1.06	0.01	0.01	0.02	0.00	35.57	0.00
	Precautionary Area	0.03	0.01	0.02	0.45	0.01	0.00	0.01	0.00	15.10	0.00
	Manuevering	0.02	0.00	0.01	0.15	0.00	0.00	0.00	0.00	5.67	0.00
	Anchorage	0.01	0.00	0.00	0.17	0.00	0.00	0.01	0.00	11.23	0.00
	Berthing	0.02	0.00	0.01	0.16	0.01	0.01	0.02	0.00	29.43	0.00
Grand Total		**0.17**	**0.03**	**0.09**	**2.81**	**0.04**	**0.04**	**0.08**	**0.00**	**124.16**	**0.01**

Table B1-129. Annual OGVs Emissions in TPY for year 2036 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2036	anchorage	0.34	0.06	0.18	1.59	0.07	0.07	0.12	0.00	182.99	0.01
	hotelling	1.76	0.26	0.73	12.99	0.73	0.67	2.50	0.01	3770.97	0.28
	transit	32.92	4.67	16.25	129.71	4.79	4.42	5.93	0.15	8929.55	0.45
Grand Total		**35.01**	**4.99**	**17.17**	**144.29**	**5.59**	**5.16**	**8.55**	**0.17**	**12883.51**	**0.74**

Table B1-130. Peak Daily OGVs Emissions in tons/day for year 2036 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2036	Fairway: AQMD Overwater Boundary to 20-Mile	0.04	0.01	0.02	0.81	0.01	0.01	0.02	0.00	27.16	0.00
	Fairway: 20-Mile to Precautionary Area	0.06	0.01	0.03	1.06	0.01	0.01	0.02	0.00	35.57	0.00
	Precautionary Area	0.03	0.01	0.02	0.45	0.01	0.00	0.01	0.00	15.10	0.00
	Manuevering	0.02	0.00	0.01	0.15	0.00	0.00	0.00	0.00	5.67	0.00
	Anchorage	0.01	0.00	0.00	0.17	0.00	0.00	0.01	0.00	11.23	0.00
	Berthing	0.02	0.00	0.01	0.16	0.01	0.01	0.02	0.00	29.43	0.00
Grand Total		**0.17**	**0.03**	**0.09**	**2.81**	**0.04**	**0.04**	**0.08**	**0.00**	**124.16**	**0.01**

Table B1-131. Annual OGVs Emissions in TPY for year 2045 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2045	anchorage	0.34	0.06	0.18	0.72	0.07	0.07	0.12	0.00	182.99	0.01
	hotelling	1.76	0.26	0.73	9.28	0.73	0.67	2.50	0.01	3770.97	0.28
	transit	32.92	4.67	16.25	53.72	4.79	4.42	5.93	0.15	8929.55	0.45
Grand Total		**35.01**	**4.99**	**17.17**	**63.73**	**5.59**	**5.16**	**8.55**	**0.17**	**12883.51**	**0.74**

Table B1-132. Peak Daily OGVs Emissions in tons/day for year 2045 - FEIR Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2045	Fairway: AQMD Overwater Boundary to 20-Mile	0.04	0.01	0.02	0.81	0.01	0.01	0.02	0.00	27.16	0.00
	Fairway: 20-Mile to Precautionary Area	0.06	0.01	0.03	1.06	0.01	0.01	0.02	0.00	35.57	0.00
	Precautionary Area	0.03	0.01	0.02	0.45	0.01	0.00	0.01	0.00	15.10	0.00
	Manuevering	0.02	0.00	0.01	0.15	0.00	0.00	0.00	0.00	5.67	0.00
	Anchorage	0.01	0.00	0.00	0.17	0.00	0.00	0.01	0.00	11.23	0.00
	Berthing	0.02	0.00	0.01	0.16	0.01	0.01	0.02	0.00	29.43	0.00
Grand Total		**0.17**	**0.03**	**0.09**	**2.81**	**0.04**	**0.04**	**0.08**	**0.00**	**124.16**	**0.01**

Table B1-133. Vessel Transit Zones and Locations - Proposed Mitigated

Transit Zones	Short Reference	Description
1	Berth	Vessel at Berth
2	Maneuvering	Maneuvering/transit within Harbor
3	PZ	Transit within Precautionary Area
4	20nm	Fairway transit between end of PZ and 20-Mile Boundary
5	40nm	Fairway transit between 20-Mile to Overwater Boundary
Anchorage	Anchorage	Anchorage

Table B1-134. Annual Average Cargo Vessel Activities - Proposed Mitigated

	Annual								
Project Scenario/Ship Type	Annual total transits	No. of tugs per call	Number of Arrivals	Number of Departures	Number of Anchorage Calls	Anchorage Time (hr/call)	NonAMP'd Vessel Hotelling Time (hr/call)	% Calls using AMP	AMP'd vessels Auxiliary Engine Hours Runtime
Project Year 2008	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	0%	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-		
Containerships 8,000 - 9,000 TEU	4	2.0	2	2	1	2	84	100%	5.14
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-		
Containerships 5,000 - 6,000 TEU	28	2.0	14	14	-	-	61	89%	3.42
Containerships 4,000 - 5,000 TEU	18	2.0	9	9	2	6	59	0.89	
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	1	2.0	0.5	0.5	-	-	54.5	-	-
Containerships 1,000 - 2,000 TEU	0	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-
Total	51	-	26	26	3	-	-	0.9	-
Project Year 2012	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	0%	-
Containerships 9,000 - 10,000 TEU	42	2.0	21	21	2	22	75		
Containerships 8,000 - 9,000 TEU	9	2.0	5	5	-	-	73	67%	3.94
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-		
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	0%	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-
Total	1	2.0	-	1	-	-	-	-	-
Project Year 2014	-	-	-	-	-	-	-	-	-
Containerships 10,000 - 11,000 TEU	63	2.0	31	32	7	146	109	91%	6.30
Containerships 9,000 - 10,000 TEU	14	2.0	7	7	2	45	99	0%	-
Containerships 8,000 - 9,000 TEU	67	2.0	33	34	6	95	61	97%	6.00
Containerships 6,000 - 7,000 TEU	17	2.0	8	9	-	-	49	33%	3.40
Containerships 5,000 - 6,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	2	2.0	1	1	-	-	34	100%	2.80
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-
Project Year 2018	-	-	-	-	-	-	-	-	-
Containerships 11,000 - 12,000 TEU	4	2.0	2	2	-	-	157	100%	4.20
Containerships 10,000 - 11,000 TEU	4	2.0	2	2	-	-	118		
Containerships 9,000 - 10,000 TEU	4	2.0	2	2	-	-	108	100%	9.90
Containerships 8,000 - 9,000 TEU	40	2.0	20	20	-	-	86		
Containerships 7,000 - 8,000 TEU	12	2.0	6	6	-	-	77	100%	5.68
Containerships 6,000 - 7,000 TEU	108	2.0	54	54	5	4	75	0.93	
Containerships 5,000 - 6,000 TEU	12	2.0	6.0	6.0	-	-	64.0	1.00	3.7
Containerships 4,000 - 5,000 TEU	96	2.0	48.0	48.0	1.0	10.2	37.0	1.0	6.6
Containerships 3,000 - 4,000 TEU	0	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-
Total	280	2.0	140	140	6	4.7	90.2	1.0	5.7
Project Year 2023	-	-	-	-	-	-	-	-	-
Containerships 12,000 - 13,000 TEU	104	2.0	52	52	4	7	41	95%	6.30
Containerships 9,000 - 10,000 TEU	-	2.0	-	-	-	-	-		
Containerships 8,000 - 9,000 TEU	104	2.0	52	52	4	7	35	95%	6.00
Containerships 7,000 - 8,000 TEU	-	2.0	-	-	-	-	-		
Containerships 5,000 - 6,000 TEU	104	2.0	52	52	4	7	31	0.95	3.10
Containerships 4,000 - 5,000 TEU	-	2.0	-	-	-	-	-		
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	312	-	-	-	-	-	-	-	-
Project Year 2030	-	-	-	-	-	-	-	-	-
Containerships 12,000 - 13,000 TEU	104	2.0	52	52	4	7	40	95%	6.30
Containerships 9,000 - 10,000 TEU	104	2.0	52	52	4	7	34	95%	6.15
Containerships 8,000 - 9,000 TEU	-	2.0	-	-	-	-	-		
Containerships 7,000 - 8,000 TEU	104	2.0	52	52	4	7	34	95%	3.40
Containerships 5,000 - 6,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	2.0	-	-	-	-	-		
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	312	-	-	-	-	-	-	-	-
Project Year 2036	-	-	-	-	-	-	-	-	-
Containerships 12,000 - 13,000 TEU	104	2.0	52	52	4	7	40	95%	6.30
Containerships 9,000 - 10,000 TEU	104	2.0	52	52	4	7	34	95%	6.15
Containerships 8,000 - 9,000 TEU	-	2.0	-	-	-	-	-		
Containerships 7,000 - 8,000 TEU	104	2.0	52	52	4	7	34	95%	3.40
Containerships 5,000 - 6,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	2.0	-	-	-	-	-		
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	312	-	-	-	-	-	-	-	-
Project Year 2045	-	-	-	-	-	-	-	-	-
Containerships 12,000 - 13,000 TEU	104	2.0	52	52	4	7	40	95%	6.30
Containerships 9,000 - 10,000 TEU	104	2.0	52	52	4	7	34	95%	6.15
Containerships 8,000 - 9,000 TEU	-	2.0	-	-	-	-	-		
Containerships 7,000 - 8,000 TEU	104	2.0	52	52	4	7	34	95%	3.40
Containerships 5,000 - 6,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	2.0	-	-	-	-	-		
Containerships 3,000 - 4,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	2.0	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	0	2.0	-	-	-	-	-	-	-
General Cargo Vessels	-	2.0	-	-	-	-	-	-	-
Total	312	-	-	-	-	-	-	-	-

Table B1-135. Transit Parameters - Proposed Mitigated

	Maneuvering	PZ	20nm	40nm
Parameter	2	3	4	5
Project Year 2008				
Average Speed	5	11	10.96	15.38
AverageTime	1.1	0.7	2.0	1.4
VRSP Compliant Average Speed (knots)	NA	NA	10.76	10.88
VRSP Non-Compliant Average Speed (knots)	NA	NA	13.65	17.60
VSRP Compliance Rate (% transits)	NA	NA	97%	24%
Distance in miles (from CS DEIR 2008)	3.9	8.2	15.8	24.1
Project Year 2012				
Average Speed	5	11	11.04	14.30
AverageTime	1.1	0.8	1.9	1.6
VRSP Compliant Average Speed (knots)	NA	NA	10.64	10.31
VRSP Non-Compliant Average Speed (knots)	NA	NA	13.00	16.58
VSRP Compliance Rate (% transits)	NA	NA	93%	47%
Distance in miles (from CS DEIR 2008)	3.9	8.2	15.8	24.1
Project Year 2014				
Average Speed	7.5	11	11.02	11.15
AverageTime	1.0	0.7	0.7	0.5
VRSP Compliant Average Speed (knots)	NA	NA	11.00	11.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	15.00	15.00
VSRP Compliance Rate (% transits)	NA	NA	99%	96%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1
Project Year 2018				
Average Speed	6.5	9	10.44	10.96
AverageTime	0.6	0.9	1.5	2.2
VRSP Compliant Average Speed (knots)	NA	NA	10.32	10.57
VRSP Non-Compliant Average Speed (knots)	NA	NA	13.13	15.14
VSRP Compliance Rate (% transits)	NA	NA	96%	91%
Distance in miles (from CS DEIR 2008)	3.9	8.2	15.8	24.1
Project Year 2023				
Average Speed	7.5	11	12.51	13.86
AverageTime	not used	not used	not used	not used
VRSP Compliant Average Speed (knots)	NA	NA	12.00	12.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	22.00	22.00
VSRP Compliance Rate (% transits)	NA	NA	95%	95%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1
Project Year 2030				
Average Speed	7.5	11	12.51	13.86
AverageTime	not used	not used	not used	not used
VRSP Compliant Average Speed (knots)	7.5	11	12.00	12.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	22.00	22.00
VSRP Compliance Rate (% transits)	NA	NA	95%	95%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1
Project Year 2036				
Average Speed	7.5	11	12.51	13.86
AverageTime	not used	not used	not used	not used
VRSP Compliant Average Speed (knots)	7.5	11	12.00	12.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	22.00	22.00
VSRP Compliance Rate (% transits)	NA	NA	95%	95%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1
Project Year 2045				
Average Speed	7.5	11	12.51	13.86
AverageTime	not used	not used	not used	not used
VRSP Compliant Average Speed (knots)	7.5	11	12.00	12.00
VRSP Non-Compliant Average Speed (knots)	NA	NA	22.00	22.00
VSRP Compliance Rate (% transits)	NA	NA	95%	95%
distance in miles (from CS DEIR 2008)	3.5	10.4	22.4	17.1

Table B1-136. Peak Day Activity for Ocean Going Vessels - Proposed Mitigated

			Peak Day	Peak Day	Total	Peak Day Berthing		Anchorage	
Vessel Bin	Vessel Type	Year	Arrival	Departure	Transits in 24hr	Hotelling Hrs (no AMP)	Berthing Hrs (mitigated w/ AMP)	Anchorage_Hotelling	Shift
Project Year 2008									
Containerships 5,000 - 6,000 TEU	5000	2008	0	1	1	23	23	0	0
Project Year 2012									
Containerships 9,000 - 10,000 TEU	9000	2012	0	1	1	23	23	0	0
Project Year 2014									
Containerships 10,000 - 11,000 TEU	10000	0	1	1	2	6.3	17.5	0	0
Containerships 9,000 - 10,000 TEU	9000	0	0	0	0	24	0	24	0
Project Year 2018									
Containerships 9,000 - 10,000 TEU	9000	2018	0	1	1	24	0	0	0
Containerships 6,000 - 7,000 TEU	6000	2018	1	1	2	24	19.16	4.70	1
Project Year 2023									
Containerships 12,000 - 13,000 TEU	12000	2023	0	1	1	3.15	14.85	0	0
Containerships 5,000 - 6,000 TEU	5000	2023	0	1	1	1.55	16.75	0	0
Containerships 8,000 - 9,000 TEU	8000	2023	1	0	1	3	0	5.5	1
Project Year 2030									
Containerships 7,000 - 8,000 TEU	7000	2030	0	1	1	1.7	10.43	0	0
Containerships 12,000 - 13,000 TEU	12000	2030	0	1	1	3.15	16.02	0	0
Containerships 9,000 - 10,000 TEU	9000	2030	1	0	1	3.075	3.255	7.39	1
Project Year 2036									
Containerships 7,000 - 8,000 TEU	7000	2036	0	1	1	1.7	10.43	0	0
Containerships 12,000 - 13,000 TEU	12000	2036	0	1	1	3.15	16.02	0	0
Containerships 9,000 - 10,000 TEU	9000	2036	1	0	1	3.075	3.255	7.39	1
Project Year 2045									
Containerships 7,000 - 8,000 TEU	7000	2045	0	1	1	1.7	10.43	0	0
Containerships 12,000 - 13,000 TEU	12000	2045	0	1	1	3.15	16.02	0	0
Containerships 9,000 - 10,000 TEU	9000	2045	1	0	1	3.075	3.255	7.39	1

Table B1-137. Engine Loads by Zone for 2008 - Proposed Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 2,000 - 3,000 TEU	-	937	393
	Containerships 4,000 - 5,000 TEU	-	1,188	519
	Containerships 5,000 - 6,000 TEU	-	991	590
	Containerships 8,000 - 9,000 TEU	-	1,080	586
Manuevering	Containerships 2,000 - 3,000 TEU	861	1,973	393
	Containerships 4,000 - 5,000 TEU	1,082	2,524	519
	Containerships 5,000 - 6,000 TEU	1,329	3,427	590
	Containerships 8,000 - 9,000 TEU	1,652	3,480	586
Precautionary Area	Containerships 2,000 - 3,000 TEU	2,680	888	393
	Containerships 4,000 - 5,000 TEU	3,477	1,410	519
	Containerships 5,000 - 6,000 TEU	4,237	1,029	590
	Containerships 8,000 - 9,000 TEU	5,836	1,560	586
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 2,000 - 3,000 TEU	2,506	888	262
	Containerships 4,000 - 5,000 TEU	3,251	1,410	502
	Containerships 5,000 - 6,000 TEU	3,962	1,029	587
	Containerships 8,000 - 9,000 TEU	5,457	1,560	586
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 2,000 - 3,000 TEU	5,121	888	262
	Containerships 4,000 - 5,000 TEU	6,644	1,410	502
	Containerships 5,000 - 6,000 TEU	8,096	1,029	587
	Containerships 8,000 - 9,000 TEU	11,152	1,560	586
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 2,000 - 3,000 TEU	2,590	888	49
	Containerships 4,000 - 5,000 TEU	3,360	1,410	260
	Containerships 5,000 - 6,000 TEU	4,094	1,029	387
	Containerships 8,000 - 9,000 TEU	5,639	1,560	410
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 2,000 - 3,000 TEU	10,976	888	49
	Containerships 4,000 - 5,000 TEU	14,240	1,410	260
	Containerships 5,000 - 6,000 TEU	17,352	1,029	387
	Containerships 8,000 - 9,000 TEU	23,901	1,560	410
Anchorage	Containerships 2,000 - 3,000 TEU	-	-	-
	Containerships 4,000 - 5,000 TEU	-	1,292	519
	Containerships 5,000 - 6,000 TEU	-	-	-
	Containerships 8,000 - 9,000 TEU	-	1,560	586

Table B1-138. Engine Loads by Zone for 2012 - Proposed Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 8,000 - 9,000 TEU	-	927	525
	Containerships 9,000 - 10,000 TEU	-	1,040	547
Manuevering	Containerships 8,000 - 9,000 TEU	1,860	2,785	525
	Containerships 9,000 - 10,000 TEU	1,822	3,350	547
Precautionary Area	Containerships 8,000 - 9,000 TEU	5,790	1,515	525
	Containerships 9,000 - 10,000 TEU	5,699	1,502	547
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 8,000 - 9,000 TEU	5,237	1,515	525
	Containerships 9,000 - 10,000 TEU	5,155	1,502	532
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 8,000 - 9,000 TEU	9,557	1,515	525
	Containerships 9,000 - 10,000 TEU	9,407	1,502	532
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 8,000 - 9,000 TEU	4,771	1,515	225
	Containerships 9,000 - 10,000 TEU	4,696	1,502	321
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 8,000 - 9,000 TEU	19,843	1,515	225
	Containerships 9,000 - 10,000 TEU	19,531	1,502	321
Anchorage	Containerships 8,000 - 9,000 TEU	-	-	-
	Containerships 9,000 - 10,000 TEU	-	1,502	547

Table B1-139. Engine Loads by Zone for 2014 - Proposed Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 10,000 - 11,000 TEU	-	1,131	708
	Containerships 4,000 - 5,000 TEU	-	1,161	492
	Containerships 6,000 - 7,000 TEU	-	990	573
	Containerships 8,000 - 9,000 TEU	-	1,453	531
	Containerships 9,000 - 10,000 TEU	-	1,037	475
Manuevering	Containerships 10,000 - 11,000 TEU	1,868	2,105	708
	Containerships 4,000 - 5,000 TEU	1,122	2,526	492
	Containerships 6,000 - 7,000 TEU	1,604	2,197	573
	Containerships 8,000 - 9,000 TEU	1,783	2,993	531
	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
Precautionary Area	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 10,000 - 11,000 TEU	14,798	1,730	708
	Containerships 4,000 - 5,000 TEU	8,859	1,434	492
	Containerships 6,000 - 7,000 TEU	12,776	1,453	573
	Containerships 8,000 - 9,000 TEU	13,985	1,597	531
	Containerships 9,000 - 10,000 TEU	14,249	1,501	475
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 4,000 - 5,000 TEU	3,494	1,434	492
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 10,000 - 11,000 TEU	14,798	1,730	708
	Containerships 4,000 - 5,000 TEU	8,859	1,434	492
	Containerships 6,000 - 7,000 TEU	12,776	1,453	573
	Containerships 8,000 - 9,000 TEU	13,985	1,597	531
	Containerships 9,000 - 10,000 TEU	14,249	1,501	475
Anchorage	Containerships 10,000 - 11,000 TEU	-	1,557	708
	Containerships 4,000 - 5,000 TEU	-	-	-
	Containerships 6,000 - 7,000 TEU	-	-	-
	Containerships 8,000 - 9,000 TEU	-	1,470	531
	Containerships 9,000 - 10,000 TEU	-	1,501	475

Table B1-140. Engine Loads by Zone for 2018 - Proposed Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 4,000 - 5,000 TEU	-	1,161	492
	Containerships 5,000 - 6,000 TEU	-	1,028	629
	Containerships 8,000 - 9,000 TEU	-	1,453	531
	Containerships 9,000 - 10,000 TEU	-	1,037	475
	Containerships 6,000 - 7,000 TEU	-	990	573
	Containerships 10,000 - 11,000 TEU	-	1,131	708
	Containerships 7,000 - 8,000 TEU	-	2,456	623
	Containerships 11,000 - 12,000 TEU	-	1,500	790
Manuevering	Containerships 4,000 - 5,000 TEU	1,186	2,526	492
	Containerships 5,000 - 6,000 TEU	996	3,807	629
	Containerships 8,000 - 9,000 TEU	1,783	2,993	531
	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
	Containerships 6,000 - 7,000 TEU	1,604	2,197	573
	Containerships 10,000 - 11,000 TEU	1,868	2,105	708
	Containerships 7,000 - 8,000 TEU	1,303	3,086	470
	Containerships 11,000 - 12,000 TEU	2,600	3,500	575
Precautionary Area	Containerships 4,000 - 5,000 TEU	3,691	1,434	492
	Containerships 5,000 - 6,000 TEU	2,279	1,278	629
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
	Containerships 6,000 - 7,000 TEU	5,039	1,453	573
	Containerships 10,000 - 11,000 TEU	5,836	1,730	708
	Containerships 7,000 - 8,000 TEU	2,982	1,107	259
	Containerships 11,000 - 12,000 TEU	5,950	2,500	330
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 4,000 - 5,000 TEU	5,569	1,434	492
	Containerships 5,000 - 6,000 TEU	3,438	1,278	629
	Containerships 8,000 - 9,000 TEU	8,321	1,597	531
	Containerships 9,000 - 10,000 TEU	8,478	1,501	475
	Containerships 6,000 - 7,000 TEU	7,602	1,453	573
	Containerships 10,000 - 11,000 TEU	8,804	1,730	708
	Containerships 7,000 - 8,000 TEU	4,500	1,107	259
	Containerships 11,000 - 12,000 TEU	8,977	2,500	330
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 4,000 - 5,000 TEU	11,463	1,434	492
	Containerships 5,000 - 6,000 TEU	7,077	1,278	629
	Containerships 8,000 - 9,000 TEU	17,129	1,597	531
	Containerships 9,000 - 10,000 TEU	17,452	1,501	475
	Containerships 6,000 - 7,000 TEU	15,648	1,453	573
	Containerships 10,000 - 11,000 TEU	18,124	1,730	708
	Containerships 7,000 - 8,000 TEU	9,263	1,107	259
	Containerships 11,000 - 12,000 TEU	18,480	2,500	330
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 4,000 - 5,000 TEU	5,974	1,434	464
	Containerships 5,000 - 6,000 TEU	3,688	1,278	381
	Containerships 8,000 - 9,000 TEU	8,926	1,597	531
	Containerships 9,000 - 10,000 TEU	9,095	1,501	475
	Containerships 6,000 - 7,000 TEU	8,155	1,453	573
	Containerships 10,000 - 11,000 TEU	9,445	1,730	708
	Containerships 7,000 - 8,000 TEU	4,827	1,107	259
	Containerships 11,000 - 12,000 TEU	9,630	2,500	330
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 4,000 - 5,000 TEU	17,562	1,434	464
	Containerships 5,000 - 6,000 TEU	10,843	1,278	381
	Containerships 8,000 - 9,000 TEU	26,242	1,597	531
	Containerships 9,000 - 10,000 TEU	26,737	1,501	475
	Containerships 6,000 - 7,000 TEU	23,974	1,453	573
	Containerships 10,000 - 11,000 TEU	27,767	1,730	708
	Containerships 7,000 - 8,000 TEU	14,191	1,107	259
	Containerships 11,000 - 12,000 TEU	28,312	2,500	330
Anchorage	Containerships 4,000 - 5,000 TEU	-	1,200	472
	Containerships 6,000 - 7,000 TEU	-	1,645	611

Table B1-141. Engine Loads by Zone for 2023 - Proposed Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 5,000 - 6,000 TEU	-	900	547
	Containerships 8,000 - 9,000 TEU	-	1,453	531
	Containerships 12,000 - 13,000 TEU	-	982	599
Manuevering	Containerships 5,000 - 6,000 TEU	1,363	3,367	547
	Containerships 8,000 - 9,000 TEU	1,783	2,993	531
	Containerships 12,000 - 13,000 TEU	1,953	3,085	599
Precautionary Area	Containerships 5,000 - 6,000 TEU	4,266	1,725	545
	Containerships 8,000 - 9,000 TEU	5,515	1,597	531
	Containerships 12,000 - 13,000 TEU	6,156	1,865	599
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 5,000 - 6,000 TEU	5,539	1,725	545
	Containerships 8,000 - 9,000 TEU	7,160	1,597	531
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 5,000 - 6,000 TEU	34,129	1,725	545
	Containerships 8,000 - 9,000 TEU	44,122	1,597	531
	Containerships 12,000 - 13,000 TEU	49,250	1,865	599
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 5,000 - 6,000 TEU	5,539	1,725	545
	Containerships 8,000 - 9,000 TEU	7,160	1,597	531
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 5,000 - 6,000 TEU	34,129	1,725	545
	Containerships 8,000 - 9,000 TEU	44,122	1,597	531
	Containerships 12,000 - 13,000 TEU	49,250	1,865	599
Anchorage	Containerships 5,000 - 6,000 TEU	-	1,725	547
	Containerships 8,000 - 9,000 TEU	-	1,470	531
	Containerships 12,000 - 13,000 TEU	-	1,865	599

Table B1-142. Engine Loads by Zone for 2030 - Proposed Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 9,000 - 10,000 TEU	-	1,037	475
	Containerships 12,000 - 13,000 TEU	-	982	599
	Containerships 7,000 - 8,000 TEU	-	1,372	551
Manuevering	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
	Containerships 12,000 - 13,000 TEU	1,953	3,085	599
	Containerships 7,000 - 8,000 TEU	1,694	3,357	551
Precautionary Area	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
	Containerships 12,000 - 13,000 TEU	6,156	1,865	599
	Containerships 7,000 - 8,000 TEU	5,277	1,444	538
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 9,000 - 10,000 TEU	44,954	1,501	475
	Containerships 12,000 - 13,000 TEU	49,250	1,865	599
	Containerships 7,000 - 8,000 TEU	42,215	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 9,000 - 10,000 TEU	44,954	1,501	475
	Containerships 12,000 - 13,000 TEU	49,250	1,865	599
	Containerships 7,000 - 8,000 TEU	42,215	1,444	538
Anchorage	Containerships 9,000 - 10,000 TEU	-	1,501	475
	Containerships 12,000 - 13,000 TEU	-	1,865	599
	Containerships 7,000 - 8,000 TEU	-	1,444	551

Table B1-143. Engine Loads by Zone for 2036 - Proposed Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 9,000 - 10,000 TEU	-	1,037	475
	Containerships 12,000 - 13,000 TEU	-	982	599
	Containerships 7,000 - 8,000 TEU	-	1,372	551
Manuevering	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
	Containerships 12,000 - 13,000 TEU	1,953	3,085	599
	Containerships 7,000 - 8,000 TEU	1,694	3,357	551
Precautionary Area	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
	Containerships 12,000 - 13,000 TEU	6,156	1,865	599
	Containerships 7,000 - 8,000 TEU	5,277	1,444	538
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 9,000 - 10,000 TEU	44,954	1,501	475
	Containerships 12,000 - 13,000 TEU	49,250	1,865	599
	Containerships 7,000 - 8,000 TEU	42,215	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 9,000 - 10,000 TEU	44,954	1,501	475
	Containerships 12,000 - 13,000 TEU	49,250	1,865	599
	Containerships 7,000 - 8,000 TEU	42,215	1,444	538
Anchorage	Containerships 9,000 - 10,000 TEU	-	1,501	475
	Containerships 12,000 - 13,000 TEU	-	1,865	599
	Containerships 7,000 - 8,000 TEU	-	1,444	551

Table B1-144. Engine Loads by Zone for 2045 - Proposed Mitigated

Zone Description	Vessel Size	Propulsion Engine (kW)	Auxiliary Engines (kW)	Boiler (kW)
Berthing	Containerships 9,000 - 10,000 TEU	-	1,037	475
	Containerships 12,000 - 13,000 TEU	-	982	599
	Containerships 7,000 - 8,000 TEU	-	1,372	551
Manuevering	Containerships 9,000 - 10,000 TEU	1,805	2,942	475
	Containerships 12,000 - 13,000 TEU	1,953	3,085	599
	Containerships 7,000 - 8,000 TEU	1,694	3,357	551
Precautionary Area	Containerships 9,000 - 10,000 TEU	5,619	1,501	475
	Containerships 12,000 - 13,000 TEU	6,156	1,865	599
	Containerships 7,000 - 8,000 TEU	5,277	1,444	538
Fairway: 20-Mile to Precautionary Area - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: 20-Mile to Precautionary Area - Without VSR	Containerships 9,000 - 10,000 TEU	44,954	1,501	475
	Containerships 12,000 - 13,000 TEU	49,250	1,865	599
	Containerships 7,000 - 8,000 TEU	42,215	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	Containerships 9,000 - 10,000 TEU	7,295	1,501	475
	Containerships 12,000 - 13,000 TEU	7,992	1,865	599
	Containerships 7,000 - 8,000 TEU	6,851	1,444	538
Fairway: AQMD Overwater Boundary to 20-Mile - Without VSR	Containerships 9,000 - 10,000 TEU	44,954	1,501	475
	Containerships 12,000 - 13,000 TEU	49,250	1,865	599
	Containerships 7,000 - 8,000 TEU	42,215	1,444	538
Anchorage	Containerships 9,000 - 10,000 TEU	-	1,501	475
	Containerships 12,000 - 13,000 TEU	-	1,865	599
	Containerships 7,000 - 8,000 TEU	-	1,444	551

Table B1-145. Annual OGVs Emissions in TPY for year 2008 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2008	anchorage	0.05	0.04	0.04	0.46	0.42	0.03	0.04	0.00	26.49	0.00
	hotelling	1.18	0.94	0.39	5.86	19.34	0.22	0.51	0.00	1162.11	0.09
	transit	2.78	2.22	2.68	48.46	23.39	2.39	3.45	0.02	1413.80	0.08
Grand Total		**4.00**	**3.20**	**3.11**	**54.78**	**43.14**	**2.63**	**4.00**	**0.03**	**2602.41**	**0.17**

Table B1-146. Peak Daily OGVs Emissions in tons/day for year 2008 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2008	Fairway: AQMD Overwater Boundary to 20-Mile - Without \	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: 20-Mile to Precautionary Area - Without VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: 20-Mile to Precautionary Area - With VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Precautionary Area	0.00	0.00	0.00	0.04	0.00	0.00	0.02	0.00	0.95	0.00
	Manuevering	0.00	0.01	0.02	0.17	0.01	0.01	0.05	0.00	3.31	0.00
	Anchorage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Berthing	0.03	0.03	0.01	0.35	0.04	0.04	0.51	0.00	32.49	0.00
Grand Total		**0.04**	**0.04**	**0.03**	**0.57**	**0.05**	**0.04**	**0.58**	**0.00**	**36.75**	**0.00**

Table B1-147. Annual OGVs Emissions in TPY for year 2012 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2012	anchorage	0.03	0.03	0.03	1.05	0.17	0.05	0.11	0.00	76.45	0.00
	hotelling	0.82	0.76	0.74	25.71	4.87	1.17	2.81	0.02	2364.41	0.14
	transit	1.03	0.95	1.02	49.05	3.10	3.29	5.56	0.03	1569.77	0.08
Grand Total		**1.88**	**1.73**	**1.79**	**75.81**	**8.13**	**4.51**	**8.49**	**0.05**	**4010.63**	**0.23**

Table B1-148. Peak Daily OGVs Emissions in tons/day for year 2012 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2012	Fairway: AQMD Overwater Boundary to 20-Mile - Without \	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: 20-Mile to Precautionary Area - Without VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: 20-Mile to Precautionary Area - With VSR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Precautionary Area	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.00	1.18	0.00
	Manuevering	0.02	0.00	0.01	0.12	0.00	0.00	0.01	0.00	3.33	0.00
	Anchorage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Berthing	0.04	0.01	0.02	0.35	0.01	0.01	0.07	0.00	30.87	0.00
Grand Total		**0.06**	**0.01**	**0.03**	**0.50**	**0.02**	**0.01**	**0.08**	**0.00**	**35.39**	**0.00**

Table B1-149. Annual OGVs Emissions in TPY for year 2014 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2014	anchorage	3.40	0.74	1.29	34.34	0.90	0.82	1.85	0.03	3052.56	0.17
	hotelling	3.25	0.53	1.30	32.62	1.15	1.05	3.20	0.03	5613.97	0.40
	transit	5.03	1.21	4.36	131.86	1.29	1.17	2.47	0.10	4344.30	0.30
Grand Total		**11.67**	**2.48**	**6.95**	**198.83**	**3.34**	**3.04**	**7.52**	**0.15**	**13010.84**	**0.87**

Table B1-150. Peak Daily OGVs Emissions in tons/day for year 2014 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2014	Fairway: AQMD Overwater Boundary to 20-Mile	0.03	0.01	0.03	0.59	0.01	0.01	0.02	0.00	25.49	0.00
	Fairway: 20-Mile to Precautionary Area	0.03	0.01	0.03	0.60	0.01	0.01	0.01	0.00	21.84	0.00
	Precautionary Area	0.02	0.00	0.02	0.37	0.00	0.00	0.01	0.00	13.06	0.00
	Manuevering	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	3.29	0.00
	Anchorage	0.05	0.01	0.02	0.44	0.01	0.01	0.01	0.00	38.82	0.00
	Berthing	0.05	0.01	0.02	0.43	0.01	0.01	0.03	0.00	52.90	0.00
Grand Total		**0.17**	**0.04**	**0.11**	**2.51**	**0.05**	**0.04**	**0.08**	**0.00**	**155.40**	**0.01**

Table B1-151. Annual OGVs Emissions in TPY for year 2018 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2018	anchorage	0.02	0.02	0.02	0.91	0.04	0.05	0.07	0.00	53.82	0.00
	hotelling	1.16	1.08	0.37	27.91	4.11	1.13	2.68	0.02	6201.10	0.47
	transit	3.15	2.90	3.03	282.24	5.74	14.83	20.83	0.15	8642.07	0.53
Grand Total		**4.32**	**4.00**	**3.41**	**311.07**	**9.89**	**16.01**	**23.58**	**0.17**	**14896.99**	**1.00**

Table B1-152. Peak Daily OGVs Emissions in tons/day for year 2018 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2018	Fairway: AQMD Overwater Boundary to 20-Mile - Without \	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fairway: AQMD Overwater Boundary to 20-Mile - With VSR	0.01	0.00	0.03	0.45	0.00	0.00	0.01	0.00	9.22	0.00
	Fairway: 20-Mile to Precautionary Area - Without VSR	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	1.82	0.00
	Fairway: 20-Mile to Precautionary Area - With VSR	0.01	0.00	0.02	0.35	0.00	0.00	0.01	0.00	7.54	0.00
	Precautionary Area	0.01	0.00	0.02	0.37	0.00	0.00	0.01	0.00	9.04	0.00
	Manuevering	0.01	0.00	0.05	0.48	0.00	0.00	0.01	0.00	8.06	0.00
	Anchorage	0.03	0.01	0.03	0.44	0.01	0.01	0.01	0.00	21.41	0.00
	Berthing	0.03	0.01	0.01	0.30	0.01	0.01	0.03	0.00	39.78	0.00
Grand Total		**0.09**	**0.02**	**0.17**	**2.45**	**0.03**	**0.03**	**0.06**	**0.00**	**96.87**	**0.01**

Table B1-153. Annual OGVs Emissions in TPY for year 2023 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2023	anchorage	0.27	0.06	0.12	2.73	0.06	0.06	0.13	0.00	189.86	0.01
	hotelling	2.12	0.34	0.86	21.98	0.82	0.76	2.69	0.02	4051.15	0.29
	transit	15.70	3.10	8.58	268.85	3.23	2.98	6.10	0.16	9183.37	0.56
Grand Total		**18.09**	**3.50**	**9.57**	**293.55**	**4.11**	**3.80**	**8.91**	**0.18**	**13424.38**	**0.87**

Table B1-154. Peak Daily OGVs Emissions in tons/day for year 2023 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2023	Fairway: AQMD Overwater Boundary to 20-Mile	0.04	0.01	0.02	0.81	0.01	0.01	0.02	0.00	27.16	0.00
	Fairway: 20-Mile to Precautionary Area	0.06	0.01	0.03	1.06	0.01	0.01	0.02	0.00	35.57	0.00
	Precautionary Area	0.03	0.01	0.02	0.45	0.01	0.00	0.01	0.00	15.10	0.00
	Manuevering	0.02	0.00	0.01	0.15	0.00	0.00	0.00	0.00	5.67	0.00
	Anchorage	0.01	0.00	0.00	0.17	0.00	0.00	0.01	0.00	11.23	0.00
	Berthing	0.02	0.00	0.01	0.16	0.01	0.01	0.02	0.00	29.43	0.00
Grand Total		**0.17**	**0.03**	**0.09**	**2.81**	**0.04**	**0.04**	**0.08**	**0.00**	**124.16**	**0.01**

Table B1-155. Annual OGVs Emissions in TPY for year 2030 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2030	anchorage	0.26	0.05	0.12	2.03	0.06	0.06	0.11	0.00	169.67	0.01
	hotelling	2.08	0.33	0.85	19.29	0.80	0.74	2.64	0.02	3974.46	0.29
	transit	33.80	4.88	16.59	214.87	5.00	4.62	6.29	0.16	9469.42	0.48
Grand Total		**36.14**	**5.27**	**17.57**	**236.19**	**5.87**	**5.42**	**9.04**	**0.18**	**13613.55**	**0.78**

Table B1-156. Peak Daily OGVs Emissions in tons/day for year 2030 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2030	Fairway: AQMD Overwater Boundary to 20-Mile	0.04	0.01	0.02	0.81	0.01	0.01	0.02	0.00	27.16	0.00
	Fairway: 20-Mile to Precautionary Area	0.06	0.01	0.03	1.06	0.01	0.01	0.02	0.00	35.57	0.00
	Precautionary Area	0.03	0.01	0.02	0.45	0.01	0.00	0.01	0.00	15.10	0.00
	Manuevering	0.02	0.00	0.01	0.15	0.00	0.00	0.00	0.00	5.67	0.00
	Anchorage	0.01	0.00	0.00	0.17	0.00	0.00	0.01	0.00	11.23	0.00
	Berthing	0.02	0.00	0.01	0.16	0.01	0.01	0.02	0.00	29.43	0.00
Grand Total		**0.17**	**0.03**	**0.09**	**2.81**	**0.04**	**0.04**	**0.08**	**0.00**	**124.16**	**0.01**

Table B1-157. Annual OGVs Emissions in TPY for year 2036 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2036	anchorage	0.34	0.06	0.18	1.59	0.07	0.07	0.12	0.00	182.99	0.01
	hotelling	2.08	0.33	0.85	14.76	0.80	0.74	2.64	0.02	3974.46	0.29
	transit	33.80	4.88	16.59	137.16	5.00	4.62	6.29	0.16	9469.42	0.48
Grand Total		**36.22**	**5.28**	**17.63**	**153.50**	**5.88**	**5.43**	**9.05**	**0.18**	**13626.87**	**0.78**

Table B1-158. Peak Daily OGVs Emissions in tons/day for year 2036 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2036	Fairway: AQMD Overwater Boundary to 20-Mile	0.04	0.01	0.02	0.81	0.01	0.01	0.02	0.00	27.16	0.00
	Fairway: 20-Mile to Precautionary Area	0.06	0.01	0.03	1.06	0.01	0.01	0.02	0.00	35.57	0.00
	Precautionary Area	0.03	0.01	0.02	0.45	0.01	0.00	0.01	0.00	15.10	0.00
	Manuevering	0.02	0.00	0.01	0.15	0.00	0.00	0.00	0.00	5.67	0.00
	Anchorage	0.01	0.00	0.00	0.17	0.00	0.00	0.01	0.00	11.23	0.00
	Berthing	0.02	0.00	0.01	0.16	0.01	0.01	0.02	0.00	29.43	0.00
Grand Total		**0.17**	**0.03**	**0.09**	**2.81**	**0.04**	**0.04**	**0.08**	**0.00**	**124.16**	**0.01**

Table B1-159. Annual OGVs Emissions in TPY for year 2045 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpy)	DPM (tpy)	HC (tpy)	NOx (tpy)	PM (tpy)	PM2.5 (tpy)	SOx (tpy)	CH4 (tpy)	CO2 (tpy)	N2O (tpy)
2045	anchorage	0.34	0.06	0.18	0.72	0.07	0.07	0.12	0.00	182.99	0.01
	hotelling	2.08	0.33	0.85	10.05	0.80	0.74	2.64	0.02	3974.46	0.29
	transit	33.80	4.88	16.59	56.70	5.00	4.62	6.29	0.16	9469.42	0.48
Grand Total		**36.22**	**5.28**	**17.63**	**67.48**	**5.88**	**5.43**	**9.05**	**0.18**	**13626.87**	**0.78**

Table B1-160. Peak Daily OGVs Emissions in tons/day for year 2045 - Proposed Mitigated

Year	Emissions Type	Pollutant CO (tpd)	DPM (tpd)	HC (tpd)	NOx (tpd)	PM (tpd)	PM2.5 (tpd)	SOx (tpd)	CH4 (tpd)	CO2 (tpd)	N2O (tpd)
2045	Fairway: AQMD Overwater Boundary to 20-Mile	0.04	0.01	0.02	0.81	0.01	0.01	0.02	0.00	27.16	0.00
	Fairway: 20-Mile to Precautionary Area	0.06	0.01	0.03	1.06	0.01	0.01	0.02	0.00	35.57	0.00
	Precautionary Area	0.03	0.01	0.02	0.45	0.01	0.00	0.01	0.00	15.10	0.00
	Manuevering	0.02	0.00	0.01	0.15	0.00	0.00	0.00	0.00	5.67	0.00
	Anchorage	0.01	0.00	0.00	0.17	0.00	0.00	0.01	0.00	11.23	0.00
	Berthing	0.02	0.00	0.01	0.16	0.01	0.01	0.02	0.00	29.43	0.00
Grand Total		**0.17**	**0.03**	**0.09**	**2.81**	**0.04**	**0.04**	**0.08**	**0.00**	**124.16**	**0.01**

Rail
Locomotives and Switchers

Table B1-161. Line-Haul Composite Emission Factors - all scenarios - in g/bhp-hr

Year	Type	Emission Factors[1] (g/bhp-hr)									
		VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul	0.379	1.280	7.252	0.005	0.256	0.256	0.235	494.0	0.040	0.013
2012	Line-Haul	0.297	1.280	6.014	0.005	0.201	0.201	0.186	494.0	0.040	0.013
2014	Line-Haul	0.250	1.280	5.692	0.005	0.168	0.168	0.157	494.0	0.040	0.013
2018	Line-Haul	0.219	1.280	5.767	0.005	0.144	0.144	0.133	494.0	0.040	0.013
2023	Line-Haul	0.165	1.280	4.605	0.005	0.105	0.105	0.098	494.0	0.040	0.013
2030	Line-Haul	0.109	1.280	3.189	0.005	0.065	0.065	0.062	494.0	0.040	0.013
2036	Line-Haul	0.073	1.280	2.175	0.005	0.039	0.039	0.038	494.0	0.040	0.013
2045	Line-Haul	0.046	1.280	1.271	0.005	0.019	0.019	0.019	494.0	0.040	0.013

Table B1-162. Switchers Composite Emission Factors - all scenarios - in g/bhp-hr

Year	Type	Emission Factors[1] (g/bhp-hr)									
		VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Switchers	0.449	1.779	6.825	0.006	0.175	0.175	0.157	662.0	0.050	0.017
2012	Switchers	0.241	1.803	4.404	0.006	0.037	0.037	0.034	669.5	0.050	0.017
2014	Switchers	0.241	1.779	4.403	0.006	0.037	0.037	0.034	669.4	0.050	0.017
2018	Switchers	0.241	1.802	4.403	0.006	0.037	0.037	0.034	669.4	0.050	0.017
2023	Switchers	0.241	1.802	4.403	0.006	0.037	0.037	0.034	669.4	0.050	0.017
2030	Switchers	0.241	1.802	4.403	0.006	0.037	0.037	0.034	669.4	0.050	0.017
2036	Switchers	0.241	1.802	4.403	0.006	0.037	0.037	0.034	669.4	0.050	0.017
2045	Switchers	0.241	1.802	4.403	0.006	0.037	0.037	0.034	669.4	0.050	0.017

Note:

1) Emission Factors represent a composit mix of the various engine tier levels and corresponding tier-specific emission factors, weighted according to the fleet mix percentage of each tier.

Table B1-163. Fuel Productivity Factor for Locomotives

Fuel Productivity Factor (gross ton-miles/gal)							
2008	2012	2014	2018	2023	2030	2036	2045
696.00	702.96	717.09	746.21	784.27	840.84	892.57	976.19

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Table B1-164. Rail Fleet Characteristics & Mix

Train Description	% of Fleet Mix							
	2008	2012	2014	2018	2023	2030	2036	2045
Line-Haul								
pre-controlled	0.078	--	0.004	--	--	--	--	--
Tier 0	0.387	0.145	0.031	--	--	--	--	--
Tier 0+	0.057	0.187	0.133	0.408	0.243	0.097	0.022	--
Tier 1	0.068	0.029	0.032	--	--	--	--	--
Tier 1+	0.010	0.037	0.138	0.122	0.113	0.067	0.033	--
Tier 2	0.401	0.529	0.399	0.052	--	--	--	--
Tier 2+	--	--	0.133	0.157	0.198	0.153	0.091	0.016
Tier 3	--	0.074	0.131	0.180	0.170	0.153	0.125	0.053
Tier 4	0.000	0.000	0.000	0.080	0.276	0.531	0.729	0.931
Switchers								
PHL's pre-controlled switchers	--	--	--	--	--	--	--	--
pre-controlled	0.029	--	--	--	--	--	--	--
Tier 0	--	--	--	--	--	--	--	--
Tier 0+	--	--	--	--	--	--	--	--
Tier 1	--	--	--	--	--	--	--	--
Tier 1+	--	--	--	--	--	--	--	--
Tier 2	0.812	--	--	--	--	--	--	--
Tier 2+	--	--	--	--	--	--	--	--
Tier 3	--	0.915	0.914	0.914	0.914	0.914	0.914	0.914
Tier 4	--	--	--	--	--	--	--	--
Gensets	0.160	0.085	0.086	0.086	0.086	0.086	0.086	0.086

Table B1-165. Rail Raw Emission Factors by Tier

Locomotive Type	EF (g/bhp-hr)									
	VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
Line Hauls										
pre-controlled	0.48	1.28	13	0.005	0.32	0.32	0.29	494	0.04	0.013
Tier 0	0.48	1.28	8.6	0.005	0.32	0.32	0.29	494	0.04	0.013
Tier 0+	0.3	1.28	7.2	0.005	0.2	0.2	0.18	494	0.04	0.013
Tier 1	0.47	1.28	6.7	0.005	0.32	0.32	0.29	494	0.04	0.013
Tier 1+	0.29	1.28	6.7	0.005	0.2	0.2	0.18	494	0.04	0.013
Tier 2	0.26	1.28	4.95	0.005	0.18	0.18	0.17	494	0.04	0.013
Tier 2+	0.13	1.28	4.95	0.005	0.08	0.08	0.08	494	0.04	0.013
Tier 3	0.13	1.28	4.95	0.005	0.08	0.08	0.08	494	0.04	0.013
Tier 4	0.04	1.28	1	0.005	0.015	0.015	0.015	494	0.04	0.013
Switchers										
PHL's pre-controlled switchers*	0.87	1.83	17.6	0.006	0.38	0.38	0.35	678	0.05	0.017
pre-controlled	1.01	1.83	12.6	0.006	0.44	0.44	0.4	678	0.05	0.017
Tier 0	1.01	1.83	12.6	0.006	0.44	0.44	0.4	678	0.05	0.017
Tier 0+										
Tier 1**	1.01	1.83	9.9	0.006	0.43	0.43	0.4	678	0.05	0.017
Tier 1+										
Tier 1	0.51	1.83	7.3	0.006	0.19	0.19	0.17	678	0.05	0.017
Tier 2+										
Tier 3	0.26	1.83	4.5	0.006	0.036	0.036	0.033	678	0.05	0.017
Tier 4										
Gensets	0.04	1.51	3.37	0.005	0.05	0.05	0.05	578	0.05	0.015

* Based on data collected during development of the 2001 POLA emissions inventory

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

Notes:

1. Emission factors for VOC, NOx, and PM10 were calculated from g/gal factors published in EPA *Technical Highlights: Emission Factors for Locomotives* , EPA-420-F-09-025, April 2009, except for NOx in 2012-2015. NOx emission factors in 2012-2015 reflect compliance with the 2005 MOU, and are based on the 2011 compliance report (the latest available). By 2016, the EPA emission factors become cleaner than the MOU emission factor; therefore, national fleet average emission factors for NOx were used starting in 2016.

2. VOC emission factors equal 1.053 x HC emission factors, per EPA *Regulatory Impact Analysis: Control of Emissions of Air Pollution from Locomotive Engines and Marine Compression Ignition Engines Less than 30 Liters Per Cylinder* , EPA-420-R-08-001a, May 2008, page 3-77.

3. Emission factor for CO from EPA *Locomotive Emission Standards - Regulatory Support Document* , April 1998.

4. PM2.5 emissions are assumed to be 92% of PM10 emissions (POLA 2012 Air Emissions Inventory, pg. 115).

5. GHG emissions factors (CO2, N2O, and CH4) are from the POLA 2012 Air Emissions Inventory, Table 6.6.

6. PM, PM10, and DPM emissions from locomotives are assumed to be equivalent (POLA 2012 Air Emissions Inventory, pg. 115).

7. Emission factors for SOx were calculated using mass balance based on fuel sulfur content, assuming all sulfur is converted to SO2. The average line haul locomotive fuel mixture is assumed to be 100% out of state fuel for arriving locomotives, and 90% California ULSD and 10% out of state fuel for departing locomotives. (Starcrest, personal communication with Joseph Ray, April 12, 2013).

8. California ULSD fuel is assumed to have an average sulfur content of 15 ppm for all project analysis years. Out of state fuel is assumed to have an average sulfur content of 123 ppm through 2012, and 15 ppm starting 2013 in response to the EPA Nonroad Diesel Fuel Rule (15 ppm in-use is required by 12/1/2012). The 2012 EPA diesel fuel sulfur content is from Table 3.4-8a of EPA's *Final Regulatory Analysis: Control of Emissions from Nonroad Diesel Engines* , EPA-420-R-04-007, May 2004.

9. Emission factors assume a line haul locomotive fuel consumption rate of 20.8 bhp-hr per gallon of fuel, from EPA Technical Highlights: Emission Factors for Locomotives, EPA-420-F-09-025, April 2009.

Year	2008

Table B1-166. On-site Rail Operations 2008 - All Scenarios

Parameters	2008	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.797	0.695
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

Table B1-167. China Shipping On-site Switching Activity 2008 - All Scenarios

Activity	2008
Annual Throughput WBCT	1,374,855
China Shipping Fraction of Throughput	0.30
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**399**

Table B1-168. Offsite Rail Operations 2008 - All Scenarios

Parameters	2008 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		0.6	0.7	20.2	0.6	5.8
East River Bank		0.1	0.1	0.8	0.1	
BNSF San Bernardino		3.7	5.0	41.9	3.7	
BNSF Cajon		1.4	1.9	15.0	1.4	
UP Los Angeles		1.2	1.6	10.2	1.2	
UP Alhambra		1.3	1.7	10.8	1.3	
UP Yuma		1.4	1.9	12.0	1.4	
UP Mojave		0.1	0.1	0.8	0.1	
Locomotives per Train	6	5	4	4	4	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.0	0.1		0.0	
BNSF Hobart & Commerce Yards		0.1	0.1		0.1	
UP East LA Yard		0.0	0.0		0.0	
UP LATC Yard		0.0	0.0		0.0	
UP COI Yard		0.0	0.0		0.0	
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	4	4	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.6	0.1	na
UP Yuma		0.0	0.1	0.3	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	4	4	4	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	20,649
BNSF Hobart & Commerce Yards	27,244
UP East LA Yard	2,549
UP LATC Yard	512
UP COI Yard	3
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on data collected during development of the 2001 POLA emissions inventory

Table B1-169. China Shipping Line -haul In Yard Activity 2008 - All Scenarios

Parameters	2008 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	6,614
China Shipping Related Off-dock Activity	
UP ICTF Yard	984
BNSF Hobart & Commerce Yards	1,298
UP East LA Yard	121
UP LATC Yard	24
UP COI Yard	0
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-170. China Shipping Line-haul Traveling 2008 - All Scenarios

	2008
Fuel Productivity Factor (gross ton-miles/gal)	676

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

Table B1-171. Line-haul Travel within SCAB 2008 - All Scenarios

Parameters	**Peak Day Train Travel**	**Peak Daily Work Done by Line Haul Locomotives ***
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	204,844	6,307
East River Bank	9,436	291
BNSF San Bernardino	468,059	14,412
BNSF Cajon	170,071	5,237
UP Los Angeles	122,464	3,771
UP Alhambra	129,227	3,979
UP Yuma	142,896	4,400
UP Mojave	10,001	308

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-172. Line-haul Travel from SCAB Border to CA Border 2008 - All Scenarios

Parameters	**Peak Day Train Travel**	**Peak Daily Work Done by Line Haul Locomotives***
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	1,309,821	40,330
UP Yuma	744,839	22,934
UP Mojave	65,721	2,024

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-173. China Shipping Switchers In Yard Activity 2008 - All Scenarios

	2008
Activity/Yards	**Peak Day Work Done by Switchers (hp-hr/day)***
On-site (In terminal) Activity	399
China Shipping-Related Off-dock Activity	
UP ICTF Yard	61
BNSF Hobart & Commerce Yards	80
UP East LA Yard	8
UP LATC Yard	2
UP COI Yard	0
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Analysis Year:	2008

Table B1-174. Line-haul Travel Within SCAB Boundaries Peak Day Emissions 2008

Year	Type	Subdivision	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	Alameda Corridor	6,307	5.271	17.799	100.845	0.069	3.558	3.558	3.262	6,869	0.556	0.181
2008	Line-Haul Travel	East River Bank	291	0.243	0.820	4.645	0.003	0.164	0.164	0.150	316	0.026	0.008
2008	Line-Haul Travel	BNSF San Bernardino	14,412	12.044	40.669	230.427	0.158	8.131	8.131	7.453	15,696	1.271	0.413
2008	Line-Haul Travel	BNSF Cajon	5,237	4.376	14.777	83.726	0.058	2.954	2.954	2.708	5,703	0.462	0.150
2008	Line-Haul Travel	UP Los Angeles	3,771	3.151	10.641	60.289	0.041	2.127	2.127	1.950	4,107	0.333	0.108
2008	Line-Haul Travel	UP Alhambra	3,979	3.325	11.228	63.619	0.044	2.245	2.245	2.058	4,333	0.351	0.114
2008	Line-Haul Travel	UP Yuma	4,400	3.677	12.416	70.348	0.048	2.482	2.482	2.275	4,792	0.388	0.126
2008	Line-Haul Travel	UP Mojave	308	0.257	0.869	4.924	0.003	0.174	0.174	0.159	335	0.027	0.009

Table B1-175. Line-haul Travel Between SCAB Boundaries and CA Border Peak Day Emissions 2008

Year	Type	Segment	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	BNSF Cajon	40,330	33.704	113.808	644.828	0.443	22.753	22.753	20.857	43,923	3.557	1.156
2008	Line-Haul Travel	UP Yuma	22,934	19.166	64.718	366.686	0.252	12.939	12.939	11.861	24,977	2.022	0.657
2008	Line-Haul Travel	UP Mojave	2,024	1.691	5.710	32.355	0.022	1.142	1.142	1.047	2,204	0.178	0.058

Table B1-176. Line-Haul Travel Peak Day Total Emissions (lbs/day) 2008

Year	Type	Region	Peak Day Work from Locomotives (hp-hr/day)	Peak Daily Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	Within SCAB boundaries	38,704	32	109	619	0	22	22	20	42,152	3	1
2008	Line-Haul Travel	Between SCAB Boundar	65,288	55	184	1,044	1	37	37	34	71,104	6	2

Peaking Factor:	234.190

Annual Emissions (tons/yr):

Table B1-177. Line-haul Travel Within SCAB Boundaries Annual

Emissions 2008 Year	Type	Subdivision	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	Alameda Corridor	1,477,097	0.617	2.084	11.808	0.008	0.417	0.417	0.382	804.341	0.065	0.021
2008	Line-Haul Travel	East River Bank	68,040	0.028	0.096	0.544	0.000	0.019	0.019	0.018	37.051	0.003	0.001
2008	Line-Haul Travel	BNSF San Bernardino	3,375,098	1.410	4.762	26.982	0.019	0.952	0.952	0.873	1,837.881	0.149	0.048
2008	Line-Haul Travel	BNSF Cajon	1,226,354	0.512	1.730	9.804	0.007	0.346	0.346	0.317	667.801	0.054	0.018
2008	Line-Haul Travel	UP Los Angeles	883,066	0.369	1.246	7.060	0.005	0.249	0.249	0.228	480.866	0.039	0.013
2008	Line-Haul Travel	UP Alhambra	931,831	0.389	1.315	7.449	0.005	0.263	0.263	0.241	507.421	0.041	0.013
2008	Line-Haul Travel	UP Yuma	1,030,398	0.431	1.454	8.237	0.006	0.291	0.291	0.266	561.094	0.045	0.015
2008	Line-Haul Travel	UP Mojave	72,116	0.030	0.102	0.577	0.000	0.020	0.020	0.019	39.270	0.003	0.001

Table B1-178. Line-haul Travel Between SCAB Boundaries and CA Border Annual Emissions 2008

Year	Type	Segment	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	BNSF Cajon	9,444,907	3.947	13.326	75.506	0.052	2.664	2.664	2.442	5,143.145	0.416	0.135
2008	Line-Haul Travel	UP Yuma	5,370,911	2.244	7.578	42.937	0.030	1.515	1.515	1.389	2,924.685	0.237	0.077
2008	Line-Haul Travel	UP Mojave	473,904	0.198	0.669	3.789	0.003	0.134	0.134	0.123	258.060	0.021	0.007

Table B1-179. Line-haul Travel Total Annual Emissions (tons/yr) 2008

Year	Type	Region	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	Within SCAB boundaries	9,064,000	3.787	12.789	72.461	0.050	2.557	2.557	2.344	4,935.725	0.400	0.130
2008	Line-Haul Travel	Between SCAB Boundar	15,289,722	6.389	21.573	122.232	0.084	4.313	4.313	3.954	8,325.890	0.674	0.219

One Hour Peak Emissions (lbs/hr):

Table B1-180. Line-haul Travel Within SCAB Boundaries Peak Hourly

Emissions 2008 Year	Type	Subdivision	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	Alameda Corridor	262.80	0.22	0.74	4.20	0.00	0.15	0.15	0.14	286.21	0.02	0.01
2008	Line-Haul Travel	East River Bank	12.11	0.01	0.03	0.19	0.00	0.01	0.01	0.01	13.18	0.00	0.00
2008	Line-Haul Travel	BNSF San Bernardino	600.49	0.50	1.69	9.60	0.01	0.34	0.34	0.31	653.99	0.05	0.02
2008	Line-Haul Travel	BNSF Cajon	218.19	0.18	0.62	3.49	0.00	0.12	0.12	0.11	237.63	0.02	0.01
2008	Line-Haul Travel	UP Los Angeles	157.11	0.13	0.44	2.51	0.00	0.09	0.09	0.08	171.11	0.01	0.00
2008	Line-Haul Travel	UP Alhambra	165.79	0.14	0.47	2.65	0.00	0.09	0.09	0.09	180.56	0.01	0.00
2008	Line-Haul Travel	UP Yuma	183.33	0.15	0.52	2.93	0.00	0.10	0.10	0.09	199.66	0.02	0.01
2008	Line-Haul Travel	UP Mojave	12.83	0.01	0.04	0.21	0.00	0.01	0.01	0.01	13.97	0.00	0.00

Table B1-181. Line-haul Travel Between SCAB Boundaries and CA Border Peak Hourly Emissions 2008

Year	Type	Segment	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	BNSF Cajon	1,680.42	1.40	4.74	26.87	0.02	0.95	0.95	0.87	1,830.12	0.15	0.05
2008	Line-Haul Travel	UP Yuma	955.58	0.80	2.70	15.28	0.01	0.54	0.54	0.49	1,040.71	0.08	0.03
2008	Line-Haul Travel	UP Mojave	84.32	0.07	0.24	1.35	0.00	0.05	0.05	0.04	91.83	0.01	0.00

Table B1-182. Line-haul Travel Total Peak Hourly Emissions 2008

Year	Type	Region	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	Within SCAB boundaries	1,613	1.348	4.551	25.784	0.018	0.910	0.910	0.834	1,756.314	0.142	0.046
2008	Line-Haul Travel	Between SCAB Boundar	2,720	2.273	7.677	43.495	0.030	1.535	1.535	1.407	2,962.661	0.240	0.078

Eight-Hour Peak Period Emissions (lbs/hr):

Table B1-183. Line-haul Travel Within SCAB Boundaries 8-hr Peak Period

Emissions 2008 Year	Type	Subdivision	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	Alameda Corridor	2,102.42	1.76	5.93	33.62	0.02	1.19	1.19	1.09	2,289.71	0.19	0.06
2008	Line-Haul Travel	East River Bank	96.84	0.08	0.27	1.55	0.00	0.05	0.05	0.05	105.47	0.01	0.00
2008	Line-Haul Travel	BNSF San Bernardino	4,803.94	4.01	13.56	76.81	0.05	2.71	2.71	2.48	5,231.89	0.42	0.14
2008	Line-Haul Travel	BNSF Cajon	1,745.53	1.46	4.93	27.91	0.02	0.98	0.98	0.90	1,901.03	0.15	0.05
2008	Line-Haul Travel	UP Los Angeles	1,256.91	1.05	3.55	20.10	0.01	0.71	0.71	0.65	1,368.88	0.11	0.04
2008	Line-Haul Travel	UP Alhambra	1,326.32	1.11	3.74	21.21	0.01	0.75	0.75	0.69	1,444.47	0.12	0.04
2008	Line-Haul Travel	UP Yuma	1,466.61	1.23	4.14	23.45	0.02	0.83	0.83	0.76	1,597.27	0.13	0.04
2008	Line-Haul Travel	UP Mojave	102.65	0.09	0.29	1.64	0.00	0.06	0.06	0.05	111.79	0.01	0.00

Table B1-184. Line-haul Travel Between SCAB Boundaries and CA Border 8-hr Peak Period Emissions 2008

Year	Type	Segment	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	BNSF Cajon	13,443.40	11.23	37.94	214.94	0.15	7.58	7.58	6.95	14,640.98	1.19	0.39
2008	Line-Haul Travel	UP Yuma	7,644.68	6.39	21.57	122.23	0.08	4.31	4.31	3.95	8,325.69	0.67	0.22
2008	Line-Haul Travel	UP Mojave	674.53	0.56	1.90	10.78	0.01	0.38	0.38	0.35	734.62	0.06	0.02

Table B1-185. Line-haul Travel Total 8-hr Peak Period Emissions 2008

Year	Type	Region	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul Travel	Within SCAB boundaries	12,901	10.781	36.406	206.274	0.142	7.278	7.278	6.672	14,050.515	1.138	0.370
2008	Line-Haul Travel	Between SCAB Boundar	21,763	18.187	61.412	347.956	0.239	12.278	12.278	11.255	23,701.288	1.919	0.624

Analysis Year:	2008

Table B1-186. Line-haul In-yard Peak Daily Emissions (lbs/day) 2008

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Line Haul In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul	WBCT (On-Site)	6,614	5.527	18.664	105.747	0.073	3.731	3.731	3.420	7,203.040	0.583	0.190
2008	Line-Haul	UP ICTF Yard	984	0.822	2.777	15.733	0.011	0.555	0.555	0.509	1,071.683	0.087	0.028
2008	Line-Haul	BNSF Hobart & Commerce Yards	1,298	1.085	3.664	20.758	0.014	0.732	0.732	0.671	1,413.977	0.114	0.037
2008	Line-Haul	UP East LA Yard	121	0.102	0.343	1.942	0.001	0.069	0.069	0.063	132.298	0.011	0.003
2008	Line-Haul	UP LATC Yard	24	0.020	0.069	0.390	0.000	0.014	0.014	0.013	26.579	0.002	0.001
2008	Line-Haul	UP COI Yard	0	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.152	0.000	0.000
2008	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2008	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**2,428**	2.03	6.85	38.83	0.03	1.37	1.37	1.26	2,644.69	0.21	0.07

Table B1-187. Line-haul In-yard Annual Emissions (tons/yr) 2008

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Line Haul In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul	WBCT (On-Site)	1,548,896	0.647	2.185	12.382	0.009	0.437	0.437	0.401	843.438	0.068	0.022
2008	Line-Haul	UP ICTF Yard	230,448	0.096	0.325	1.842	0.001	0.065	0.065	0.060	125.488	0.010	0.003
2008	Line-Haul	BNSF Hobart & Commerce Yards	304,053	0.127	0.429	2.431	0.002	0.086	0.086	0.079	165.569	0.013	0.004
2008	Line-Haul	UP East LA Yard	28,449	0.012	0.040	0.227	0.000	0.008	0.008	0.007	15.491	0.001	0.000
2008	Line-Haul	UP LATC Yard	5,715	0.002	0.008	0.046	0.000	0.002	0.002	0.001	3.112	0.000	0.000
2008	Line-Haul	UP COI Yard	33	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.000	0.000
2008	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2008	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**568,697**	0.24	0.80	4.55	0.00	0.16	0.16	0.15	309.68	0.03	0.01

Peaking Factor:	234.190

Table B1-188. Line-haul In-yard Peak Hour Emissions (lbs/hr) 2008

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Peak Line Haul In-Yard Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul	WBCT (On-Site)	275.58	0.230	0.778	4.406	0.003	0.155	0.155	0.143	300.127	0.024	0.008
2008	Line-Haul	UP ICTF Yard	41.00	0.034	0.116	0.656	0.000	0.023	0.023	0.021	44.653	0.004	0.001
2008	Line-Haul	BNSF Hobart & Commerce Yards	54.10	0.045	0.153	0.865	0.001	0.031	0.031	0.028	58.916	0.005	0.002
2008	Line-Haul	UP East LA Yard	5.06	0.004	0.014	0.081	0.000	0.003	0.003	0.003	5.512	0.000	0.000
2008	Line-Haul	UP LATC Yard	1.02	0.001	0.003	0.016	0.000	0.001	0.001	0.001	1.107	0.000	0.000
2008	Line-Haul	UP COI Yard	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000
2008	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2008	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**101**	0.08	0.29	1.62	0.00	0.06	0.06	0.05	110.20	0.01	0.00

Table B1-189. Line-haul In-yard Eight-Hour Peak Emissions (lbs/hr) 2008

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Line Haul In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Line-Haul	WBCT (On-Site)	2,204.62	1.842	6.221	35.249	0.024	1.244	1.244	1.140	2,401.013	0.194	0.063
2008	Line-Haul	UP ICTF Yard	328.01	0.274	0.926	5.244	0.004	0.185	0.185	0.170	357.228	0.029	0.009
2008	Line-Haul	BNSF Hobart & Commerce Yards	432.77	0.362	1.221	6.919	0.005	0.244	0.244	0.224	471.326	0.038	0.012
2008	Line-Haul	UP East LA Yard	40.49	0.034	0.114	0.647	0.000	0.023	0.023	0.021	44.099	0.004	0.001
2008	Line-Haul	UP LATC Yard	8.14	0.007	0.023	0.130	0.000	0.005	0.005	0.004	8.860	0.001	0.000
2008	Line-Haul	UP COI Yard	0.05	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.051	0.000	0.000
2008	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2008	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**809**	0.68	2.28	12.94	0.01	0.46	0.46	0.42	881.56	0.07	0.02

Analysis Year:	2008

Table B1-190. Switchers In-yard Peak Daily Emissions (lbs/day) 2008

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Switcher In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Switchers	WBCT (On-Site)	399	0.395	1.564	5.999	0.005	0.154	0.154	0.138	581.874	0.044	0.015
2008	Switchers	UP ICTF Yard	61	0.060	0.239	0.917	0.001	0.023	0.023	0.021	88.970	0.007	0.002
2008	Switchers	BNSF Hobart & Commerce Yards	80	0.080	0.315	1.210	0.001	0.031	0.031	0.028	117.387	0.009	0.003
2008	Switchers	UP East LA Yard	8	0.007	0.030	0.113	0.000	0.003	0.003	0.003	10.983	0.001	0.000
2008	Switchers	UP LATC Yard	2	0.001	0.006	0.023	0.000	0.001	0.001	0.001	2.207	0.000	0.000
2008	Switchers	UP COI Yard	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.000
2008	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2008	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**150**	0.15	0.59	2.26	0.00	0.06	0.06	0.05	219.56	0.02	0.01

Table B1-191. Switchers In-yard Annual Emissions (tons/yr) 2008

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Switcher In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Switchers	WBCT (On-Site)	93,365	0.046	0.183	0.702	0.001	0.018	0.018	0.016	68.134	0.005	0.002
2008	Switchers	UP ICTF Yard	14,276	0.007	0.028	0.107	0.000	0.003	0.003	0.002	10.418	0.001	0.000
2008	Switchers	BNSF Hobart & Commerce Yards	18,835	0.009	0.037	0.142	0.000	0.004	0.004	0.003	13.745	0.001	0.000
2008	Switchers	UP East LA Yard	1,762	0.001	0.003	0.013	0.000	0.000	0.000	0.000	1.286	0.000	0.000
2008	Switchers	UP LATC Yard	354	0.000	0.001	0.003	0.000	0.000	0.000	0.000	0.258	0.000	0.000
2008	Switchers	UP COI Yard	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
2008	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2008	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**35,229**	0.02	0.07	0.27	0.00	0.01	0.01	0.01	25.71	0.00	0.00

Peaking Factor:	234.190

Table B1-192. Switchers In-yard Peak Hour Emissions (lbs/hr) 2008

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Switcher In-Yard Peak Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Switchers	WBCT (On-Site)	16.61	0.016	0.065	0.250	0.000	0.006	0.006	0.006	24.245	0.002	0.001
2008	Switchers	UP ICTF Yard	2.54	0.003	0.010	0.038	0.000	0.001	0.001	0.001	3.707	0.000	0.000
2008	Switchers	BNSF Hobart & Commerce Yards	3.35	0.003	0.013	0.050	0.000	0.001	0.001	0.001	4.891	0.000	0.000
2008	Switchers	UP East LA Yard	0.31	0.000	0.001	0.005	0.000	0.000	0.000	0.000	0.458	0.000	0.000
2008	Switchers	UP LATC Yard	0.06	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.092	0.000	0.000
2008	Switchers	UP COI Yard	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
2008	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2008	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**6**	0.01	0.02	0.09	0.00	0.00	0.00	0.00	9.15	0.00	0.00

Table B1-193. Switchers In-yard Eight-Hour Peak Emissions (lbs/hr) 2008

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Switcher In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2008	Switchers	WBCT (On-Site)	132.89	0.132	0.521	2.000	0.002	0.051	0.051	0.046	193.958	0.015	0.005
2008	Switchers	UP ICTF Yard	20.32	0.020	0.080	0.306	0.000	0.008	0.008	0.007	29.657	0.002	0.001
2008	Switchers	BNSF Hobart & Commerce Yards	26.81	0.027	0.105	0.403	0.000	0.010	0.010	0.009	39.129	0.003	0.001
2008	Switchers	UP East LA Yard	2.51	0.002	0.010	0.038	0.000	0.001	0.001	0.001	3.661	0.000	0.000
2008	Switchers	UP LATC Yard	0.50	0.000	0.002	0.008	0.000	0.000	0.000	0.000	0.736	0.000	0.000
2008	Switchers	UP COI Yard	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000
2008	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2008	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**50**	0.05	0.20	0.75	0.00	0.02	0.02	0.02	73.19	0.01	0.00

Year	2012

Table B1-194. On-site Rail Operations 2012 - All Scenarios

Parameters	2012	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.808	0.745
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

Table B1-195. China Shipping On-site Switching Activity 2012 - All Scenarios

Activity	2012
Annual Throughput WBCT	1,374,855
China Shipping Fraction of Throughput	0.51
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**676**

Table B1-196. Offsite Rail Operations 2012 - All Scenarios

Parameters	2012 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		0.7	0.9	20.6	0.7	6.3
East River Bank		0.1	0.1	0.8	0.1	
BNSF San Bernardino		3.8	5.0	43.9	3.8	
BNSF Cajon		1.4	1.9	15.8	1.4	
UP Los Angeles		1.4	1.8	10.0	1.4	
UP Alhambra		1.5	2.0	10.6	1.5	
UP Yuma		1.6	2.1	11.8	1.6	
UP Mojave		0.1	0.1	0.8	0.1	
Locomotives per Train	6	5	4	4	4	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.0	0.1		0.0	
BNSF Hobart & Commerce Yards		0.1	0.1		0.1	
UP East LA Yard		0.0	0.0		0.0	
UP LATC Yard		0.0	0.0		0.0	
UP COI Yard		0.0	0.0		0.0	
BNSF SB Yard		0.0	0.0		0.0	
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	4	4	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.6	0.1	na
UP Yuma		0.0	0.1	0.3	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	4	4	4	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	27,181
BNSF Hobart & Commerce Yards	29,264
UP East LA Yard	1,491
UP LATC Yard	621
UP COI Yard	1
BNSF SB Yard	43
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on data collected during development of the 2001 POLA emissions inventory

Table B1-197. China Shipping Line -haul In Yard Activity 2012 - All Scenarios

Parameters	2012 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	6,769
China Shipping Related Off-dock Activity	
UP ICTF Yard	1,211
BNSF Hobart & Commerce Yards	1,304
UP East LA Yard	66
UP LATC Yard	28
UP COI Yard	0
BNSF SB Yard	2
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-198. China Shipping Line-haul Traveling 2012 - All Scenarios

	2012
Fuel Productivity Factor (gross ton-miles/gal)	703

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

Table B1-199. Line-haul Travel within SCAB 2012 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	212,724	6,294
East River Bank	9,819	291
BNSF San Bernardino	487,594	14,427
BNSF Cajon	177,128	5,241
UP Los Angeles	124,946	3,697
UP Alhambra	132,803	3,930
UP Yuma	146,802	4,344
UP Mojave	10,274	304

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-200. Line-haul Travel from SCAB Border to CA Border 2012 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	1,364,167	40,365
UP Yuma	765,200	22,642
UP Mojave	67,518	1,998

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-201. China Shipping Switchers In Yard Activity 2012 - All Scenarios

	2012
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	676
China Shipping-Related Off-dock Activity	
UP ICTF Yard	96
BNSF Hobart & Commerce Yards	104
UP East LA Yard	5
UP LATC Yard	2
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Analysis Year:	2012

Table B1-202. Line-haul Travel Within SCAB Boundaries Peak Day Emissions 2012

Year	Type	Subdivision	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	Alameda Corridor	6,294	4.121	17.762	83.459	0.069	2.795	2.795	2.587	6,855	0.555	0.180
2012	Line-Haul Travel	East River Bank	291	0.190	0.820	3.852	0.003	0.129	0.129	0.119	316	0.026	0.008
2012	Line-Haul Travel	BNSF San Bernardino	14,427	9.445	40.713	191.299	0.159	6.407	6.407	5.931	15,713	1.272	0.413
2012	Line-Haul Travel	BNSF Cajon	5,241	3.431	14.790	69.493	0.058	2.328	2.328	2.155	5,708	0.462	0.150
2012	Line-Haul Travel	UP Los Angeles	3,697	2.420	10.433	49.020	0.041	1.642	1.642	1.520	4,026	0.326	0.106
2012	Line-Haul Travel	UP Alhambra	3,930	2.572	11.089	52.103	0.043	1.745	1.745	1.615	4,280	0.347	0.113
2012	Line-Haul Travel	UP Yuma	4,344	2.844	12.258	57.595	0.048	1.929	1.929	1.786	4,731	0.383	0.124
2012	Line-Haul Travel	UP Mojave	304	0.199	0.858	4.031	0.003	0.135	0.135	0.125	331	0.027	0.009

Table B1-203. Line-haul Travel Between SCAB Boundaries and CA Border Peak Day Emissions 2012

Year	Type	Segment	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	BNSF Cajon	40,365	26.425	113.905	535.208	0.444	17.926	17.926	16.593	43,960	3.560	1.157
2012	Line-Haul Travel	UP Yuma	22,642	14.823	63.893	300.213	0.249	10.055	10.055	9.308	24,659	1.997	0.649
2012	Line-Haul Travel	UP Mojave	1,998	1.308	5.638	26.489	0.022	0.887	0.887	0.821	2,176	0.176	0.057

Table B1-204. Line-Haul Travel Peak Day Total Emissions (lbs/day) 2012

Year	Type	Region	Peak Day Work from Locomotives (hp-hr/day)	Peak Daily Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	Within SCAB boundaries	38,528	25	109	511	0	17	17	16	41,960	3	1
2012	Line-Haul Travel	Between SCAB Boundar	65,004	43	183	862	1	29	29	27	70,795	6	2

Peaking Factor:	250.416

Annual Emissions (tons/yr):

Table B1-205. Line-haul Travel Within SCAB Boundaries Annual

Emissions 2012 Year	Type	Subdivision	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	Alameda Corridor	1,576,204	0.516	2.224	10.450	0.009	0.350	0.350	0.324	858.308	0.069	0.023
2012	Line-Haul Travel	East River Bank	72,754	0.024	0.103	0.482	0.000	0.016	0.016	0.015	39.617	0.003	0.001
2012	Line-Haul Travel	BNSF San Bernardino	3,612,880	1.183	5.098	23.952	0.020	0.802	0.802	0.743	1,967.363	0.159	0.052
2012	Line-Haul Travel	BNSF Cajon	1,312,446	0.430	1.852	8.701	0.007	0.291	0.291	0.270	714.681	0.058	0.019
2012	Line-Haul Travel	UP Los Angeles	925,798	0.303	1.306	6.138	0.005	0.206	0.206	0.190	504.136	0.041	0.013
2012	Line-Haul Travel	UP Alhambra	984,015	0.322	1.388	6.524	0.005	0.218	0.218	0.202	535.837	0.043	0.014
2012	Line-Haul Travel	UP Yuma	1,087,745	0.356	1.535	7.211	0.006	0.242	0.242	0.224	592.323	0.048	0.016
2012	Line-Haul Travel	UP Mojave	76,129	0.025	0.107	0.505	0.000	0.017	0.017	0.016	41.456	0.003	0.001

Table B1-206. Line-haul Travel Between SCAB Boundaries and CA Border Annual Emissions 2012

Year	Type	Segment	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	BNSF Cajon	10,107,950	3.309	14.262	67.012	0.056	2.244	2.244	2.078	5,504.200	0.446	0.145
2012	Line-Haul Travel	UP Yuma	5,669,834	1.856	8.000	37.589	0.031	1.259	1.259	1.165	3,087.460	0.250	0.081
2012	Line-Haul Travel	UP Mojave	500,279	0.164	0.706	3.317	0.003	0.111	0.111	0.103	272.423	0.022	0.007

Table B1-207. Line-haul Travel Total Annual Emissions (tons/yr) 2012

Year	Type	Region	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	Within SCAB boundaries	9,647,971	3.158	13.613	63.963	0.053	2.142	2.142	1.983	5,253.722	0.425	0.138
2012	Line-Haul Travel	Between SCAB Boundar	16,278,063	5.328	22.968	107.918	0.089	3.615	3.615	3.346	8,864.083	0.718	0.233

One Hour Peak Emissions (lbs/hr):

Table B1-208. Line-haul Travel Within SCAB Boundaries Peak Hourly

Emissions 2012 Year	Type	Subdivision	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	Alameda Corridor	262.26	0.17	0.74	3.48	0.00	0.12	0.12	0.11	285.63	0.02	0.01
2012	Line-Haul Travel	East River Bank	12.11	0.01	0.03	0.16	0.00	0.01	0.01	0.00	13.18	0.00	0.00
2012	Line-Haul Travel	BNSF San Bernardino	601.15	0.39	1.70	7.97	0.01	0.27	0.27	0.25	654.70	0.05	0.02
2012	Line-Haul Travel	BNSF Cajon	218.38	0.14	0.62	2.90	0.00	0.10	0.10	0.09	237.83	0.02	0.01
2012	Line-Haul Travel	UP Los Angeles	154.04	0.10	0.43	2.04	0.00	0.07	0.07	0.06	167.77	0.01	0.00
2012	Line-Haul Travel	UP Alhambra	163.73	0.11	0.46	2.17	0.00	0.07	0.07	0.07	178.32	0.01	0.00
2012	Line-Haul Travel	UP Yuma	180.99	0.12	0.51	2.40	0.00	0.08	0.08	0.07	197.11	0.02	0.01
2012	Line-Haul Travel	UP Mojave	12.67	0.01	0.04	0.17	0.00	0.01	0.01	0.01	13.80	0.00	0.00

Table B1-209. Line-haul Travel Between SCAB Boundaries and CA Border Peak Hourly Emissions 2012

Year	Type	Segment	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	BNSF Cajon	1,681.86	1.10	4.75	22.30	0.02	0.75	0.75	0.69	1,831.68	0.15	0.05
2012	Line-Haul Travel	UP Yuma	943.40	0.62	2.66	12.51	0.01	0.42	0.42	0.39	1,027.44	0.08	0.03
2012	Line-Haul Travel	UP Mojave	83.24	0.05	0.23	1.10	0.00	0.04	0.04	0.03	90.66	0.01	0.00

Table B1-210. Line-haul Travel Total Peak Hourly Emissions 2012

Year	Type	Region	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	Within SCAB boundaries	1,605	1.051	4.530	21.286	0.018	0.713	0.713	0.660	1,748.329	0.142	0.046
2012	Line-Haul Travel	Between SCAB Boundar	2,708	1.773	7.643	35.913	0.030	1.203	1.203	1.113	2,949.782	0.239	0.078

Eight-Hour Peak Period Emissions (lbs/hr):

Table B1-211. Line-haul Travel Within SCAB Boundaries 8-hr Peak Period

Emissions 2012			8-hr Peak Hour Work (hp-	8-hr Peak Period Emissions (lbs/8hr period)									
Year	Type	Subdivision	hr/day)	VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	Alameda Corridor	2,098.11	1.37	5.92	27.82	0.02	0.93	0.93	0.86	2,285.02	0.19	0.06
2012	Line-Haul Travel	East River Bank	96.84	0.06	0.27	1.28	0.00	0.04	0.04	0.04	105.47	0.01	0.00
2012	Line-Haul Travel	BNSF San Bernardino	4,809.16	3.15	13.57	63.77	0.05	2.14	2.14	1.98	5,237.58	0.42	0.14
2012	Line-Haul Travel	BNSF Cajon	1,747.02	1.14	4.93	23.16	0.02	0.78	0.78	0.72	1,902.65	0.15	0.05
2012	Line-Haul Travel	UP Los Angeles	1,232.34	0.81	3.48	16.34	0.01	0.55	0.55	0.51	1,342.13	0.11	0.04
2012	Line-Haul Travel	UP Alhambra	1,309.84	0.86	3.70	17.37	0.01	0.58	0.58	0.54	1,426.52	0.12	0.04
2012	Line-Haul Travel	UP Yuma	1,447.92	0.95	4.09	19.20	0.02	0.64	0.64	0.60	1,576.90	0.13	0.04
2012	Line-Haul Travel	UP Mojave	101.34	0.07	0.29	1.34	0.00	0.05	0.05	0.04	110.36	0.01	0.00

Table B1-212. Line-haul Travel Between SCAB Boundaries and CA Border 8-hr Peak Period Emissions 2012

			8-hr Peak Hour Work (hp-	8-hr Peak Period Emissions (lbs/8hr period)									
Year	Type	Segment	hr/day)	VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	BNSF Cajon	13,454.86	8.81	37.97	178.40	0.15	5.98	5.98	5.53	14,653.46	1.19	0.39
2012	Line-Haul Travel	UP Yuma	7,547.21	4.94	21.30	100.07	0.08	3.35	3.35	3.10	8,219.54	0.67	0.22
2012	Line-Haul Travel	UP Mojave	665.93	0.44	1.88	8.83	0.01	0.30	0.30	0.27	725.25	0.06	0.02

Table B1-213. Line-haul Travel Total 8-hr Peak Period Emissions 2012

			8-hr Peak Hour Work (hp-	8-hr Peak Period Emissions (lbs/8hr period)									
Year	Type	Region	hr/day)	VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul Travel	Within SCAB boundaries	12,843	8.408	36.241	170.284	0.141	5.703	5.703	5.279	13,986.631	1.133	0.368
2012	Line-Haul Travel	Between SCAB Boundar	21,668	14.185	61.145	287.304	0.238	9.623	9.623	8.907	23,598.254	1.911	0.621

Analysis Year:	2012

Table B1-214. Line-haul In-yard Peak Daily Emissions (lbs/day) 2012

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Line Haul In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul	WBCT (On-Site)	6,769	4.432	19.102	89.756	0.074	3.006	3.006	2.783	7,372.279	0.597	0.194
2012	Line-Haul	UP ICTF Yard	1,211	0.793	3.418	16.062	0.013	0.538	0.538	0.498	1,319.304	0.107	0.035
2012	Line-Haul	BNSF Hobart & Commerce Yards	1,304	0.854	3.680	17.293	0.014	0.579	0.579	0.536	1,420.383	0.115	0.037
2012	Line-Haul	UP East LA Yard	66	0.044	0.188	0.881	0.001	0.030	0.030	0.027	72.377	0.006	0.002
2012	Line-Haul	UP LATC Yard	28	0.018	0.078	0.367	0.000	0.012	0.012	0.011	30.142	0.002	0.001
2012	Line-Haul	UP COI Yard	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.029	0.000	0.000
2012	Line-Haul	BNSF SB Yard	2	0.001	0.005	0.025	0.000	0.001	0.001	0.001	2.067	0.000	0.000
2012	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**2,612**	1.71	7.37	34.63	0.03	1.16	1.16	1.07	2,844.30	0.23	0.07

Table B1-215. Line-haul In-yard Annual Emissions (tons/yr) 2012

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Line Haul In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul	WBCT (On-Site)	1,695,131	0.555	2.392	11.238	0.009	0.376	0.376	0.348	923.070	0.075	0.024
2012	Line-Haul	UP ICTF Yard	303,352	0.099	0.428	2.011	0.002	0.067	0.067	0.062	165.188	0.013	0.004
2012	Line-Haul	BNSF Hobart & Commerce Yards	326,593	0.107	0.461	2.165	0.002	0.073	0.073	0.067	177.844	0.014	0.005
2012	Line-Haul	UP East LA Yard	16,642	0.005	0.023	0.110	0.000	0.004	0.004	0.003	9.062	0.001	0.000
2012	Line-Haul	UP LATC Yard	6,931	0.002	0.010	0.046	0.000	0.002	0.002	0.001	3.774	0.000	0.000
2012	Line-Haul	UP COI Yard	7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000
2012	Line-Haul	BNSF SB Yard	475	0.000	0.001	0.003	0.000	0.000	0.000	0.000	0.259	0.000	0.000
2012	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**653,999**	0.21	0.92	4.34	0.00	0.15	0.15	0.13	356.13	0.03	0.01

Peaking Factor:	250.416

Table B1-216. Line-haul In-yard Peak Hour Emissions (lbs/hr) 2012

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Peak Line Haul In-Yard Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul	WBCT (On-Site)	282.05	0.185	0.796	3.740	0.003	0.125	0.125	0.116	307.178	0.025	0.008
2012	Line-Haul	UP ICTF Yard	50.47	0.033	0.142	0.669	0.001	0.022	0.022	0.021	54.971	0.004	0.001
2012	Line-Haul	BNSF Hobart & Commerce Yards	54.34	0.036	0.153	0.721	0.001	0.024	0.024	0.022	59.183	0.005	0.002
2012	Line-Haul	UP East LA Yard	2.77	0.002	0.008	0.037	0.000	0.001	0.001	0.001	3.016	0.000	0.000
2012	Line-Haul	UP LATC Yard	1.15	0.001	0.003	0.015	0.000	0.001	0.001	0.000	1.256	0.000	0.000
2012	Line-Haul	UP COI Yard	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
2012	Line-Haul	BNSF SB Yard	0.08	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.086	0.000	0.000
2012	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**109**	0.07	0.31	1.44	0.00	0.05	0.05	0.04	118.51	0.01	0.00

Table B1-217. Line-haul In-yard Eight-Hour Peak Emissions (lbs/hr) 2012

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Line Haul In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Line-Haul	WBCT (On-Site)	2,256.42	1.477	6.367	29.919	0.025	1.002	1.002	0.928	2,457.426	0.199	0.065
2012	Line-Haul	UP ICTF Yard	403.80	0.264	1.139	5.354	0.004	0.179	0.179	0.166	439.768	0.036	0.012
2012	Line-Haul	BNSF Hobart & Commerce Yards	434.73	0.285	1.227	5.764	0.005	0.193	0.193	0.179	473.461	0.038	0.012
2012	Line-Haul	UP East LA Yard	22.15	0.015	0.063	0.294	0.000	0.010	0.010	0.009	24.126	0.002	0.001
2012	Line-Haul	UP LATC Yard	9.23	0.006	0.026	0.122	0.000	0.004	0.004	0.004	10.047	0.001	0.000
2012	Line-Haul	UP COI Yard	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000
2012	Line-Haul	BNSF SB Yard	0.63	0.000	0.002	0.008	0.000	0.000	0.000	0.000	0.689	0.000	0.000
2012	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**871**	0.57	2.46	11.54	0.01	0.39	0.39	0.36	948.10	0.08	0.02

Analysis Year:	2012

Table B1-218. Switchers In-yard Peak Daily Emissions (lbs/day) 2012

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Switcher In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Switchers	WBCT (On-Site)	676	0.360	2.688	6.567	0.009	0.055	0.055	0.051	998.324	0.075	0.025
2012	Switchers	UP ICTF Yard	96	0.051	0.383	0.936	0.001	0.008	0.008	0.007	142.278	0.011	0.004
2012	Switchers	BNSF Hobart & Commerce Yards	104	0.055	0.412	1.008	0.001	0.009	0.009	0.008	153.179	0.011	0.004
2012	Switchers	UP East LA Yard	5	0.003	0.021	0.051	0.000	0.000	0.000	0.000	7.805	0.001	0.000
2012	Switchers	UP LATC Yard	2	0.001	0.009	0.021	0.000	0.000	0.000	0.000	3.251	0.000	0.000
2012	Switchers	UP COI Yard	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000
2012	Switchers	BNSF SB Yard	0	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.223	0.000	0.000
2012	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**208**	0.11	0.83	2.02	0.00	0.02	0.02	0.02	306.74	0.02	0.01

Table B1-219. Switchers In-yard Annual Emissions (tons/yr) 2012

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Switcher In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Switchers	WBCT (On-Site)	169,368	0.045	0.337	0.822	0.001	0.007	0.007	0.006	124.998	0.009	0.003
2012	Switchers	UP ICTF Yard	24,138	0.006	0.048	0.117	0.000	0.001	0.001	0.001	17.814	0.001	0.000
2012	Switchers	BNSF Hobart & Commerce Yards	25,987	0.007	0.052	0.126	0.000	0.001	0.001	0.001	19.179	0.001	0.000
2012	Switchers	UP East LA Yard	1,324	0.000	0.003	0.006	0.000	0.000	0.000	0.000	0.977	0.000	0.000
2012	Switchers	UP LATC Yard	551	0.000	0.001	0.003	0.000	0.000	0.000	0.000	0.407	0.000	0.000
2012	Switchers	UP COI Yard	1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2012	Switchers	BNSF SB Yard	38	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.028	0.000	0.000
2012	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**52,039**	0.01	0.10	0.25	0.00	0.00	0.00	0.00	38.41	0.00	0.00

Peaking Factor:	250.416

Table B1-220. Switchers In-yard Peak Hour Emissions (lbs/hr) 2012

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Switcher In-Yard Peak Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Switchers	WBCT (On-Site)	28.18	0.015	0.112	0.274	0.000	0.002	0.002	0.002	41.597	0.003	0.001
2012	Switchers	UP ICTF Yard	4.02	0.002	0.016	0.039	0.000	0.000	0.000	0.000	5.928	0.000	0.000
2012	Switchers	BNSF Hobart & Commerce Yards	4.32	0.002	0.017	0.042	0.000	0.000	0.000	0.000	6.382	0.000	0.000
2012	Switchers	UP East LA Yard	0.22	0.000	0.001	0.002	0.000	0.000	0.000	0.000	0.325	0.000	0.000
2012	Switchers	UP LATC Yard	0.09	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.135	0.000	0.000
2012	Switchers	UP COI Yard	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2012	Switchers	BNSF SB Yard	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.000
2012	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**9**	0.00	0.03	0.08	0.00	0.00	0.00	0.00	12.78	0.00	0.00

Table B1-221. Switchers In-yard Eight-Hour Peak Emissions (lbs/hr) 2012

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Switcher In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2012	Switchers	WBCT (On-Site)	225.45	0.120	0.896	2.189	0.003	0.018	0.018	0.017	332.775	0.025	0.008
2012	Switchers	UP ICTF Yard	32.13	0.017	0.128	0.312	0.000	0.003	0.003	0.002	47.426	0.004	0.001
2012	Switchers	BNSF Hobart & Commerce Yards	34.59	0.018	0.137	0.336	0.000	0.003	0.003	0.003	51.060	0.004	0.001
2012	Switchers	UP East LA Yard	1.76	0.001	0.007	0.017	0.000	0.000	0.000	0.000	2.602	0.000	0.000
2012	Switchers	UP LATC Yard	0.73	0.000	0.003	0.007	0.000	0.000	0.000	0.000	1.084	0.000	0.000
2012	Switchers	UP COI Yard	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
2012	Switchers	BNSF SB Yard	0.05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.074	0.000	0.000
2012	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**69**	0.04	0.28	0.67	0.00	0.01	0.01	0.01	102.25	0.01	0.00

Year	2014

Table B1-222. On-site Rail Operations 2014 - All Scenarios

Parameters	2014	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.918	0.818
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	16

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

Table B1-213. China Shipping On -site Switching Activity 2014 - All Scenarios

Activity	2014
Annual Throughput WBCT	1,606,707
China Shipping Fraction of Throughput	0.68
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**901**

Table B1-224. Offsite Rail Operations 2014 - All Scenarios

Parameters	2014 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		0.8	1.0	23.4	0.8	6.9
East River Bank		0.1	0.2	0.9	0.1	
BNSF San Bernardino		3.5	4.7	48.8	3.5	
BNSF Cajon		1.3	1.7	17.5	1.3	
UP Los Angeles		1.4	1.9	11.6	1.4	
UP Alhambra		1.5	2.0	12.4	1.5	
UP Yuma		1.7	2.2	13.7	1.7	
UP Mojave		0.1	0.2	1.0	0.1	
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.1		0.1	
BNSF Hobart & Commerce Yards		0.0	0.1		0.0	
UP East LA Yard		0.0	0.0		0.0	
UP LATC Yard		0.0	0.0		0.0	
UP COI Yard		0.0	0.0		0.0	
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	4	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.1	0.7	0.1	na
UP Yuma		0.0	0.1	0.4	0.0	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	29,001
BNSF Hobart & Commerce Yards	25,606
UP East LA Yard	114
UP LATC Yard	249
UP COI Yard	6
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on data collected during development of the 2001 POLA emissions inventory

Table B1-225. China Shipping Line -haul In Yard Activity 2014 - All Scenarios

Parameters	2014 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	7,647
China Shipping Related Off-dock Activity	
UP ICTF Yard	1,252
BNSF Hobart & Commerce Yards	1,105
UP East LA Yard	5
UP LATC Yard	11
UP COI Yard	0
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-226. China Shipping Line-haul Traveling 2014 - All Scenarios

	2014
Fuel Productivity Factor (gross ton-miles/gal)	717

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

Table B1-227. Line-haul Travel within SCAB 2014 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	239,987	6,961
East River Bank	11,264	327
BNSF San Bernardino	523,123	15,174
BNSF Cajon	189,550	5,498
UP Los Angeles	140,090	4,063
UP Alhambra	149,333	4,332
UP Yuma	165,435	4,799
UP Mojave	11,579	336

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-228. Line-haul Travel from SCAB Border to CA Border 2014 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	1,459,841	42,344
UP Yuma	862,325	25,013
UP Mojave	76,087	2,207

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-229. China Shipping Switchers In Yard Activity 2014 - All Scenarios

	2014
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	901
China Shipping-Related Off-dock Activity	
UP ICTF Yard	126
BNSF Hobart & Commerce Yards	111
UP East LA Yard	0
UP LATC Yard	1
UP COI Yard	0
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Table B1-230. Base Year Line-Haul Adjustment for Rebuilds

ARB Vision 2.0 Locomotive Module - South Coast[1]				Starcrest Data	Tier Share - Adjusted for Rebuilds[2]
ID	CY	Tier	Tier_Share	China Shipping - Line-Haul Estimate For Base Year	
10090	2014	Pre-Tier	0.00%	0.42%	**0.42%**
10151	2014	Tier 0	6.87%	16.36%	**3.07%**
10212	2014	Tier 0r	29.76%		**13.29%**
10273	2014	Tier 1	1.54%	17.01%	**3.19%**
10334	2014	Tier 1r	6.69%		**13.82%**
10395	2014	Tier 2	27.68%	53.14%	**39.85%**
10456	2014	Tier 2r	9.23%		**13.28%**
10517	2014	Tier 3	18.23%	13.08%	**13.08%**
10578	2014	Tier 4	0.00%	0.00%	**0.00%**

Notes:

1) Data obtained from ARB 2015 Vision 2.0 Locomotive Module

2) Fleet mix provided by Starcrest was adjusted using the percentage of rebuilds in the ARB Vision 2.0 Locomotive Module data for each tier level: http://www.arb.ca.gov/planning/vision/docs/vision2.0lr_locomotive_module.accdb

Analysis Year:	2014

Table B1-231. Line-haul Travel Within SCAB Boundaries Peak Day Emissions 2014

Year	Type	Subdivision	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	Alameda Corridor	6,961	3.830	19.644	87.356	0.077	2.584	2.584	2.409	7,581	0.614	0.200
2014	Line-Haul Travel	East River Bank	327	0.180	0.922	4.100	0.004	0.121	0.121	0.113	356	0.029	0.009
2014	Line-Haul Travel	BNSF San Bernardino	15,174	8.348	42.819	190.418	0.167	5.633	5.633	5.252	16,526	1.338	0.435
2014	Line-Haul Travel	BNSF Cajon	5,498	3.025	15.515	68.997	0.060	2.041	2.041	1.903	5,988	0.485	0.158
2014	Line-Haul Travel	UP Los Angeles	4,063	2.236	11.467	50.993	0.045	1.509	1.509	1.406	4,425	0.358	0.116
2014	Line-Haul Travel	UP Alhambra	4,332	2.383	12.223	54.358	0.048	1.608	1.608	1.499	4,717	0.382	0.124
2014	Line-Haul Travel	UP Yuma	4,799	2.640	13.541	60.219	0.053	1.782	1.782	1.661	5,226	0.423	0.138
2014	Line-Haul Travel	UP Mojave	336	0.185	0.948	4.215	0.004	0.125	0.125	0.116	366	0.030	0.010

Table B1-232. Line-haul Travel Between SCAB Boundaries and CA Border Peak Day Emissions 2014

Year	Type	Segment	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	BNSF Cajon	42,344	23.296	119.492	531.386	0.466	15.721	15.721	14.656	46,117	3.734	1.214
2014	Line-Haul Travel	UP Yuma	25,013	13.761	70.584	313.889	0.275	9.286	9.286	8.657	27,241	2.206	0.717
2014	Line-Haul Travel	UP Mojave	2,207	1.214	6.228	27.696	0.024	0.819	0.819	0.764	2,404	0.195	0.063

Table B1-233. Line-haul Travel Peak Daily Total Emissions (lbs/day) 2014

Year	Type	Region	Peak Day Work from Locomotives (hp-hr/day)	Peak Daily Emissions (lbs/day)									
				V OC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	Within SCAB boundaries	41,489	23	117	521	0	15	15	14	45,185	4	1
2014	Line-Haul Travel	Between SCAB Boundar	69,564	38	196	873	1	26	26	24	75,761	6	2

Peaking Factor:	240.501

Annual Emissions (tons/yr):

Table B1-234. Line-haul Travel Within SCAB Boundaries Annual Emissions 2014

Year	Type	Subdivision	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	Alameda Corridor	1,674,149	0.461	2.362	10.505	0.009	0.311	0.311	0.290	911.644	0.074	0.024
2014	Line-Haul Travel	East River Bank	78,580	0.022	0.111	0.493	0.000	0.015	0.015	0.014	42.790	0.003	0.001
2014	Line-Haul Travel	BNSF San Bernardino	3,649,302	1.004	5.149	22.898	0.020	0.677	0.677	0.632	1,987.197	0.161	0.052
2014	Line-Haul Travel	BNSF Cajon	1,322,299	0.364	1.866	8.297	0.007	0.245	0.245	0.229	720.047	0.058	0.019
2014	Line-Haul Travel	UP Los Angeles	977,264	0.269	1.379	6.132	0.005	0.181	0.181	0.169	532.161	0.043	0.014
2014	Line-Haul Travel	UP Alhambra	1,041,747	0.287	1.470	6.537	0.006	0.193	0.193	0.180	567.274	0.046	0.015
2014	Line-Haul Travel	UP Yuma	1,154,074	0.317	1.628	7.241	0.006	0.214	0.214	0.200	628.441	0.051	0.017
2014	Line-Haul Travel	UP Mojave	80,772	0.022	0.114	0.507	0.000	0.015	0.015	0.014	43.984	0.004	0.001

Table B1-235. Line-haul Travel Between SCAB Boundaries and CA Border Annual Emissions 2014

Year	Type	Segment	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	BNSF Cajon	10,183,839	2.801	14.369	63.899	0.056	1.890	1.890	1.762	5,545.524	0.449	0.146
2014	Line-Haul Travel	UP Yuma	6,015,571	1.655	8.488	37.745	0.033	1.117	1.117	1.041	3,275.729	0.265	0.086
2014	Line-Haul Travel	UP Mojave	530,786	0.146	0.749	3.330	0.003	0.099	0.099	0.092	289.035	0.023	0.008

Table B1-236. Line-haul Travel Total Annual Emissions (tons/yr) 2014

Year	Type	Region	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	Within SCAB boundaries	9,978,187	2.745	14.079	62.609	0.055	1.852	1.852	1.727	5,433.538	0.440	0.143
2014	Line-Haul Travel	Between SCAB Boundar	16,730,196	4.602	23.606	104.975	0.092	3.106	3.106	2.895	9,110.288	0.738	0.240

One Hour Peak Emissions (lbs/hr):

Table B1-237. Line-haul Travel Within SCAB Boundaries Peak Hourly Emissions 2014

Year	Type	Subdivision	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	Alameda Corridor	290.05	0.16	0.82	3.64	0.00	0.11	0.11	0.10	315.88	0.03	0.01
2014	Line-Haul Travel	East River Bank	13.61	0.01	0.04	0.17	0.00	0.01	0.01	0.00	14.83	0.00	0.00
2014	Line-Haul Travel	BNSF San Bernardino	632.24	0.35	1.78	7.93	0.01	0.23	0.23	0.22	688.56	0.06	0.02
2014	Line-Haul Travel	BNSF Cajon	229.09	0.13	0.65	2.87	0.00	0.09	0.09	0.08	249.50	0.02	0.01
2014	Line-Haul Travel	UP Los Angeles	169.31	0.09	0.48	2.12	0.00	0.06	0.06	0.06	184.39	0.01	0.00
2014	Line-Haul Travel	UP Alhambra	180.48	0.10	0.51	2.26	0.00	0.07	0.07	0.06	196.56	0.02	0.01
2014	Line-Haul Travel	UP Yuma	199.94	0.11	0.56	2.51	0.00	0.07	0.07	0.07	217.75	0.02	0.01
2014	Line-Haul Travel	UP Mojave	13.99	0.01	0.04	0.18	0.00	0.01	0.01	0.00	15.24	0.00	0.00

Table B1-238. Line-haul Travel Between SCAB Boundaries and CA Border Peak Hourly Emissions 2014

Year	Type	Segment	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	BNSF Cajon	1,764.35	0.97	4.98	22.14	0.02	0.66	0.66	0.61	1,921.52	0.16	0.05
2014	Line-Haul Travel	UP Yuma	1,042.20	0.57	2.94	13.08	0.01	0.39	0.39	0.36	1,135.04	0.09	0.03
2014	Line-Haul Travel	UP Mojave	91.96	0.05	0.26	1.15	0.00	0.03	0.03	0.03	100.15	0.01	0.00

Table B1-239. Line-haul Travel Total Peak Hourly Emissions 2014

Year	Type	Region	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	Within SCAB boundaries	1,729	0.951	4.878	21.694	0.019	0.642	0.642	0.598	1,882.718	0.152	0.050
2014	Line-Haul Travel	Between SCAB Boundar	2,899	1.595	8.179	36.374	0.032	1.076	1.076	1.003	3,156.711	0.256	0.083

Eight-Hour Peak Period Emissions (lbs/hr):

Table B1-240. Line-haul Travel Within SCAB Boundaries 8-hr Peak Period Emissions 2014

Year	Type	Subdivision	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	Alameda Corridor	2,320.37	1.28	6.55	29.12	0.03	0.86	0.86	0.80	2,527.07	0.20	0.07
2014	Line-Haul Travel	East River Bank	108.91	0.06	0.31	1.37	0.00	0.04	0.04	0.04	118.61	0.01	0.00
2014	Line-Haul Travel	BNSF San Bernardino	5,057.93	2.78	14.27	63.47	0.06	1.88	1.88	1.75	5,508.50	0.45	0.14
2014	Line-Haul Travel	BNSF Cajon	1,832.70	1.01	5.17	23.00	0.02	0.68	0.68	0.63	1,995.97	0.16	0.05
2014	Line-Haul Travel	UP Los Angeles	1,354.49	0.75	3.82	17.00	0.01	0.50	0.50	0.47	1,475.15	0.12	0.04
2014	Line-Haul Travel	UP Alhambra	1,443.86	0.79	4.07	18.12	0.02	0.54	0.54	0.50	1,572.48	0.13	0.04
2014	Line-Haul Travel	UP Yuma	1,599.54	0.88	4.51	20.07	0.02	0.59	0.59	0.55	1,742.04	0.14	0.05
2014	Line-Haul Travel	UP Mojave	111.95	0.06	0.32	1.40	0.00	0.04	0.04	0.04	121.92	0.01	0.00

Table B1-241. Line-haul Travel Between SCAB Boundaries and CA Border 8-hr Peak Period Emissions 2014

Year	Type	Segment	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	BNSF Cajon	14,114.78	7.77	39.83	177.13	0.16	5.24	5.24	4.89	15,372.17	1.24	0.40
2014	Line-Haul Travel	UP Yuma	8,337.57	4.59	23.53	104.63	0.09	3.10	3.10	2.89	9,080.31	0.74	0.24
2014	Line-Haul Travel	UP Mojave	735.67	0.40	2.08	9.23	0.01	0.27	0.27	0.25	801.20	0.06	0.02

Table B1-242. Line-haul Travel Total 8-hr Peak Period Emissions 2014

Year	Type	Region	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul Travel	Within SCAB boundaries	13,830	7.609	39.026	173.552	0.152	5.134	5.134	4.787	15,061.748	1.220	0.396
2014	Line-Haul Travel	Between SCAB Boundar	23,188	12.757	65.435	290.990	0.255	8.609	8.609	8.026	25,253.684	2.045	0.665

Analysis Year:	2014

Table B1-243. Line-haul In-yard Peak Daily Emissions (lbs/day) 2014

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Line Haul In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul	WBCT (On-Site)	7,647	4.207	21.580	95.966	0.084	2.839	2.839	2.647	8,328.454	0.674	0.219
2014	Line-Haul	UP ICTF Yard	1,252	0.689	3.533	15.710	0.014	0.465	0.465	0.433	1,363.393	0.110	0.036
2014	Line-Haul	BNSF Hobart & Commerce Yards	1,105	0.608	3.119	13.871	0.012	0.410	0.410	0.383	1,203.792	0.097	0.032
2014	Line-Haul	UP East LA Yard	5	0.003	0.014	0.062	0.000	0.002	0.002	0.002	5.374	0.000	0.000
2014	Line-Haul	UP LATC Yard	11	0.006	0.030	0.135	0.000	0.004	0.004	0.004	11.712	0.001	0.000
2014	Line-Haul	UP COI Yard	0	0.000	0.001	0.004	0.000	0.000	0.000	0.000	0.304	0.000	0.000
2014	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**2,373**	1.31	6.70	29.78	0.03	0.88	0.88	0.82	2,584.57	0.21	0.07

Table B1-244. Line-haul In-yard Annual Emissions (tons/yr) 2014

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Line Haul In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul	WBCT (On-Site)	1,839,160	0.506	2.595	11.540	0.010	0.341	0.341	0.318	1,001.499	0.081	0.026
2014	Line-Haul	UP ICTF Yard	301,076	0.083	0.425	1.889	0.002	0.056	0.056	0.052	163.948	0.013	0.004
2014	Line-Haul	BNSF Hobart & Commerce Yards	265,831	0.073	0.375	1.668	0.001	0.049	0.049	0.046	144.756	0.012	0.004
2014	Line-Haul	UP East LA Yard	1,187	0.000	0.002	0.007	0.000	0.000	0.000	0.000	0.646	0.000	0.000
2014	Line-Haul	UP LATC Yard	2,586	0.001	0.004	0.016	0.000	0.000	0.000	0.000	1.408	0.000	0.000
2014	Line-Haul	UP COI Yard	67	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.037	0.000	0.000
2014	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**570,747**	0.16	0.81	3.58	0.00	0.11	0.11	0.10	310.80	0.03	0.01

Peaking Factor:	240.501

Table B1-245. Line-haul In-yard Peak Hour Emissions (lbs/hr) 2014

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Peak Line Haul In-Yard Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul	WBCT (On-Site)	318.63	0.175	0.899	3.999	0.004	0.118	0.118	0.110	347.019	0.028	0.009
2014	Line-Haul	UP ICTF Yard	52.16	0.029	0.147	0.655	0.001	0.019	0.019	0.018	56.808	0.005	0.001
2014	Line-Haul	BNSF Hobart & Commerce Yards	46.06	0.025	0.130	0.578	0.001	0.017	0.017	0.016	50.158	0.004	0.001
2014	Line-Haul	UP East LA Yard	0.21	0.000	0.001	0.003	0.000	0.000	0.000	0.000	0.224	0.000	0.000
2014	Line-Haul	UP LATC Yard	0.45	0.000	0.001	0.006	0.000	0.000	0.000	0.000	0.488	0.000	0.000
2014	Line-Haul	UP COI Yard	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.000
2014	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**99**	0.05	0.28	1.24	0.00	0.04	0.04	0.03	107.69	0.01	0.00

Table B1-246. Line-haul In-yard Eight-Hour Peak Emissions (lbs/hr) 2014

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Line Haul In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Line-Haul	WBCT (On-Site)	2,549.07	1.402	7.193	31.989	0.028	0.946	0.946	0.882	2,776.151	0.225	0.073
2014	Line-Haul	UP ICTF Yard	417.29	0.230	1.178	5.237	0.005	0.155	0.155	0.144	454.464	0.037	0.012
2014	Line-Haul	BNSF Hobart & Commerce Yards	368.44	0.203	1.040	4.624	0.004	0.137	0.137	0.128	401.264	0.032	0.011
2014	Line-Haul	UP East LA Yard	1.64	0.001	0.005	0.021	0.000	0.001	0.001	0.001	1.791	0.000	0.000
2014	Line-Haul	UP LATC Yard	3.58	0.002	0.010	0.045	0.000	0.001	0.001	0.001	3.904	0.000	0.000
2014	Line-Haul	UP COI Yard	0.09	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.101	0.000	0.000
2014	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**791**	0.44	2.23	9.93	0.01	0.29	0.29	0.27	861.52	0.07	0.02

Analysis Year:	2014

Table B1-247. Switchers In-yard Peak Daily Emissions (lbs/day) 2014

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Switcher In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Switchers	WBCT (On-Site)	901	0.479	3.579	8.741	0.012	0.074	0.074	0.068	1,329.011	0.099	0.033
2014	Switchers	UP ICTF Yard	126	0.067	0.499	1.219	0.002	0.010	0.010	0.010	185.302	0.014	0.005
2014	Switchers	BNSF Hobart & Commerce Yards	111	0.059	0.441	1.076	0.001	0.009	0.009	0.008	163.610	0.012	0.004
2014	Switchers	UP East LA Yard	0	0.000	0.002	0.005	0.000	0.000	0.000	0.000	0.730	0.000	0.000
2014	Switchers	UP LATC Yard	1	0.001	0.004	0.010	0.000	0.000	0.000	0.000	1.592	0.000	0.000
2014	Switchers	UP COI Yard	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.041	0.000	0.000
2014	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**238**	0.13	0.95	2.31	0.00	0.02	0.02	0.02	351.28	0.03	0.01

Table B1-248. Switchers In-yard Annual Emissions (tons/yr) 2014

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Switcher In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Switchers	WBCT (On-Site)	216,588	0.058	0.430	1.051	0.001	0.009	0.009	0.008	159.814	0.012	0.004
2014	Switchers	UP ICTF Yard	30,198	0.008	0.060	0.147	0.000	0.001	0.001	0.001	22.283	0.002	0.001
2014	Switchers	BNSF Hobart & Commerce Yards	26,663	0.007	0.053	0.129	0.000	0.001	0.001	0.001	19.674	0.001	0.000
2014	Switchers	UP East LA Yard	119	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.088	0.000	0.000
2014	Switchers	UP LATC Yard	259	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.191	0.000	0.000
2014	Switchers	UP COI Yard	7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000
2014	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**57,247**	0.02	0.11	0.28	0.00	0.00	0.00	0.00	42.24	0.00	0.00

Peaking Factor:	240.501

Table B1-249. Switchers In-yard Peak Hour Emissions (lbs/hr) 2014

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Switcher In-Yard Peak Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Switchers	WBCT (On-Site)	37.52	0.020	0.149	0.364	0.000	0.003	0.003	0.003	55.375	0.004	0.001
2014	Switchers	UP ICTF Yard	5.23	0.003	0.021	0.051	0.000	0.000	0.000	0.000	7.721	0.001	0.000
2014	Switchers	BNSF Hobart & Commerce Yards	4.62	0.002	0.018	0.045	0.000	0.000	0.000	0.000	6.817	0.001	0.000
2014	Switchers	UP East LA Yard	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.000
2014	Switchers	UP LATC Yard	0.04	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.066	0.000	0.000
2014	Switchers	UP COI Yard	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000
2014	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**10**	0.01	0.04	0.10	0.00	0.00	0.00	0.00	14.64	0.00	0.00

Table B1-250. Switchers In-yard Eight-Hour Peak Emissions (lbs/hr) 2014

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Switcher In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2014	Switchers	WBCT (On-Site)	300.19	0.160	1.193	2.914	0.004	0.025	0.025	0.023	443.004	0.033	0.011
2014	Switchers	UP ICTF Yard	41.86	0.022	0.166	0.406	0.001	0.003	0.003	0.003	61.767	0.005	0.002
2014	Switchers	BNSF Hobart & Commerce Yards	36.96	0.020	0.147	0.359	0.000	0.003	0.003	0.003	54.537	0.004	0.001
2014	Switchers	UP East LA Yard	0.16	0.000	0.001	0.002	0.000	0.000	0.000	0.000	0.243	0.000	0.000
2014	Switchers	UP LATC Yard	0.36	0.000	0.001	0.003	0.000	0.000	0.000	0.000	0.531	0.000	0.000
2014	Switchers	UP COI Yard	0.01	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014	0.000	0.000
2014	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**79**	0.04	0.32	0.77	0.00	0.01	0.01	0.01	117.09	0.01	0.00

Year	2018

Table B1-251. On-site Rail Operations 2018 - All Scenarios

Parameters	2018	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.824	0.760
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15

On-site Switchers	**WBCT**
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

Table B1-252. China Shipping On-site Switching Activity 2018 - All Scenarios

Activity	2018
Annual Throughput WBCT	1,374,855
China Shipping Fraction of Throughput	0.82
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**1,094**

Table B1-253. Offsite Rail Operations 2018 - All Scenarios

Parameters	2018 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		1.6	2.1	21.1	1.6	6.4
East River Bank		0.2	0.3	0.8	0.2	
BNSF San Bernardino		8.6	11.5	44.8	8.6	
BNSF Cajon		3.3	4.3	16.1	3.3	
UP Los Angeles		3.2	4.2	10.2	3.2	
UP Alhambra		3.3	4.5	10.9	3.3	
UP Yuma		3.7	4.9	12.0	3.7	
UP Mojave		0.3	0.3	0.8	0.3	
Locomotives per Train	6	5	4	4	4	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.2		0.1	
BNSF Hobart & Commerce Yards		0.1	0.2		0.1	
UP East LA Yard		0.0	0.0		0.0	
UP LATC Yard		0.0	0.0		0.0	
UP COI Yard		0.0	0.0		0.0	
BNSF SB Yard		0.0	0.0		0.0	
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	4	4	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.1	0.2	0.6	0.1	na
UP Yuma		0.1	0.1	0.3	0.1	na
UP Mojave		0.0	0.0	0.0	0.0	na
Locomotives per Train	6	5	4	4	4	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	56,876
BNSF Hobart & Commerce Yards	61,233
UP East LA Yard	3,120
UP LATC Yard	1,299
UP COI Yard	1
BNSF SB Yard	89
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on data collected during development of the 2001 POLA emissions inventory

Table B1-254. China Shipping Line -haul In Yard Activity 2018 - All Scenarios

Parameters	2018 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	6,908
China Shipping Related Off-dock Activity	
UP ICTF Yard	2,765
BNSF Hobart & Commerce Yards	2,977
UP East LA Yard	152
UP LATC Yard	63
UP COI Yard	0
BNSF SB Yard	4
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-255. China Shipping Line-haul Traveling 2018 - All Scenarios

	2018
Fuel Productivity Factor (gross ton-miles/gal)	746

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

Table B1-256. Line-haul Travel within SCAB 2018 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	240,233	6,696
East River Bank	13,445	375
BNSF San Bernardino	624,863	17,418
BNSF Cajon	228,782	6,377
UP Los Angeles	173,981	4,850
UP Alhambra	184,807	5,151
UP Yuma	203,836	5,682
UP Mojave	14,266	398

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-257. Line-haul Travel from SCAB Border to CA Border 2018 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	1,761,993	49,114
UP Yuma	1,062,489	29,616
UP Mojave	93,749	2,613

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-258. China Shipping Switchers In Yard Activity 2018 - All Scenarios

Activity/Yards	2018 Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	1,094
China Shipping-Related Off-dock Activity	
UP ICTF Yard	299
BNSF Hobart & Commerce Yards	322
UP East LA Yard	16
UP LATC Yard	7
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Analysis Year:	2018

Table B1-259. Line-haul Travel Within SCAB Boundaries Peak Day Emissions 2018

Year	Type	Subdivision	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	Alameda Corridor	6,696	3.226	18.896	85.133	0.074	2.121	2.121	1.957	7,293	0.591	0.192
2018	Line-Haul Travel	East River Bank	375	0.181	1.058	4.765	0.004	0.119	0.119	0.110	408	0.033	0.011
2018	Line-Haul Travel	BNSF San Bernardino	17,418	8.391	49.151	221.436	0.192	5.517	5.517	5.089	18,969	1.536	0.499
2018	Line-Haul Travel	BNSF Cajon	6,377	3.072	17.996	81.075	0.070	2.020	2.020	1.863	6,945	0.562	0.183
2018	Line-Haul Travel	UP Los Angeles	4,850	2.336	13.685	61.655	0.053	1.536	1.536	1.417	5,282	0.428	0.139
2018	Line-Haul Travel	UP Alhambra	5,151	2.482	14.537	65.491	0.057	1.632	1.632	1.505	5,610	0.454	0.148
2018	Line-Haul Travel	UP Yuma	5,682	2.737	16.034	72.235	0.063	1.800	1.800	1.660	6,188	0.501	0.163
2018	Line-Haul Travel	UP Mojave	398	0.192	1.122	5.056	0.004	0.126	0.126	0.116	433	0.035	0.011

Table B1-260. Line-haul Travel Between SCAB Boundaries and CA Border Peak Day Emissions 2018

Year	Type	Segment	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	BNSF Cajon	49,114	23.662	138.597	624.406	0.540	15.556	15.556	14.351	53,490	4.331	1.408
2018	Line-Haul Travel	UP Yuma	29,616	14.268	83.574	376.520	0.326	9.380	9.380	8.654	32,254	2.612	0.849
2018	Line-Haul Travel	UP Mojave	2,613	1.259	7.374	33.222	0.029	0.828	0.828	0.764	2,846	0.230	0.075

Table B1-261. Line-Haul Travel Peak Day Total Emissions (lbs/day) 2018

Year	Type	Region	Peak Day Work from Locomotives (hp-hr/day)	Peak Daily Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	Within SCAB boundaries	46,946	23	132	597	1	15	15	14	51,128	4	1
2018	Line-Haul Travel	Between SCAB Boundar	81,344	39	230	1,034	1	26	26	24	88,590	7	2

Peaking Factor:	236.591

Table B1-262. Line-haul Travel Within SCAB Boundaries Annual

Year	Type	Subdivision	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	Alameda Corridor	1,584,292	0.382	2.235	10.071	0.009	0.251	0.251	0.231	862.713	0.070	0.023
2018	Line-Haul Travel	East River Bank	88,668	0.021	0.125	0.564	0.000	0.014	0.014	0.013	48.283	0.004	0.001
2018	Line-Haul Travel	BNSF San Bernardino	4,120,861	0.993	5.814	26.195	0.023	0.653	0.653	0.602	2,243.980	0.182	0.059
2018	Line-Haul Travel	BNSF Cajon	1,508,778	0.363	2.129	9.591	0.008	0.239	0.239	0.220	821.592	0.067	0.022
2018	Line-Haul Travel	UP Los Angeles	1,147,377	0.276	1.619	7.293	0.006	0.182	0.182	0.168	624.794	0.051	0.016
2018	Line-Haul Travel	UP Alhambra	1,218,772	0.294	1.720	7.747	0.007	0.193	0.193	0.178	663.672	0.054	0.017
2018	Line-Haul Travel	UP Yuma	1,344,264	0.324	1.897	8.545	0.007	0.213	0.213	0.196	732.008	0.059	0.019
2018	Line-Haul Travel	UP Mojave	94,083	0.023	0.133	0.598	0.001	0.015	0.015	0.014	51.232	0.004	0.001

Table B1-263. Line-haul Travel Between SCAB Boundaries and CA Border Annual Emissions 2018

Year	Type	Segment	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	BNSF Cajon	11,620,025	2.799	16.395	73.865	0.064	1.840	1.840	1.698	6,327.587	0.512	0.167
2018	Line-Haul Travel	UP Yuma	7,006,927	1.688	9.886	44.541	0.039	1.110	1.110	1.024	3,815.563	0.309	0.100
2018	Line-Haul Travel	UP Mojave	618,258	0.149	0.872	3.930	0.003	0.098	0.098	0.090	336.667	0.027	0.009

Table B1-264. Line-haul Travel Total Annual Emissions (tons/yr) 2018

Year	Type	Region	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	Within SCAB boundaries	11,107,094	2.676	15.672	70.604	0.061	1.759	1.759	1.623	6,048.275	0.490	0.159
2018	Line-Haul Travel	Between SCAB Boundar	19,245,210	4.636	27.154	122.335	0.106	3.048	3.048	2.812	10,479.818	0.849	0.276

One Hour Peak Emissions (lbs/hr):

Table B1-265. Line-haul Travel Within SCAB Boundaries Peak Hourly

Emissions 2018 Year	Type	Subdivision	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	Alameda Corridor	279.01	0.13	0.79	3.55	0.00	0.09	0.09	0.08	303.87	0.02	0.01
2018	Line-Haul Travel	East River Bank	15.62	0.01	0.04	0.20	0.00	0.00	0.00	0.00	17.01	0.00	0.00
2018	Line-Haul Travel	BNSF San Bernardino	725.74	0.35	2.05	9.23	0.01	0.23	0.23	0.21	790.39	0.06	0.02
2018	Line-Haul Travel	BNSF Cajon	265.71	0.13	0.75	3.38	0.00	0.08	0.08	0.08	289.39	0.02	0.01
2018	Line-Haul Travel	UP Los Angeles	202.07	0.10	0.57	2.57	0.00	0.06	0.06	0.06	220.07	0.02	0.01
2018	Line-Haul Travel	UP Alhambra	214.64	0.10	0.61	2.73	0.00	0.07	0.07	0.06	233.76	0.02	0.01
2018	Line-Haul Travel	UP Yuma	236.74	0.11	0.67	3.01	0.00	0.07	0.07	0.07	257.83	0.02	0.01
2018	Line-Haul Travel	UP Mojave	16.57	0.01	0.05	0.21	0.00	0.01	0.01	0.00	18.05	0.00	0.00

Table B1-266. Line-haul Travel Between SCAB Boundaries and CA Border Peak Hourly Emissions 2018

Year	Type	Segment	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	BNSF Cajon	2,046.43	0.99	5.77	26.02	0.02	0.65	0.65	0.60	2,228.73	0.18	0.06
2018	Line-Haul Travel	UP Yuma	1,234.01	0.59	3.48	15.69	0.01	0.39	0.39	0.36	1,343.94	0.11	0.04
2018	Line-Haul Travel	UP Mojave	108.88	0.05	0.31	1.38	0.00	0.03	0.03	0.03	118.58	0.01	0.00

Table B1-267. Line-haul Travel Total Peak Hourly Emissions 2018

Year	Type	Region	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	Within SCAB boundaries	1,956	0.942	5.520	24.868	0.022	0.620	0.620	0.572	2,130.354	0.172	0.056
2018	Line-Haul Travel	Between SCAB Boundar	3,389	1.633	9.564	43.090	0.037	1.073	1.073	0.990	3,691.255	0.299	0.097

Eight-Hour Peak Period Emissions (lbs/hr):

Table B1-268. Line-haul Travel Within SCAB Boundaries 8-

Emissions 2018												
Year	Type	Subdivision	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)								
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	Alameda Corridor	2,232.11	1.08	6.30	28.38	0.02	0.71	0.71	0.65	2,430.95	0.20	0.06
2018	Line-Haul Travel	East River Bank	124.92	0.06	0.35	1.59	0.00	0.04	0.04	0.04	136.05	0.01	0.00
2018	Line-Haul Travel	BNSF San Bernardino	5,805.88	2.80	16.38	73.81	0.06	1.84	1.84	1.70	6,323.09	0.51	0.17
2018	Line-Haul Travel	BNSF Cajon	2,125.72	1.02	6.00	27.02	0.02	0.67	0.67	0.62	2,315.08	0.19	0.06
2018	Line-Haul Travel	UP Los Angeles	1,616.54	0.78	4.56	20.55	0.02	0.51	0.51	0.47	1,760.55	0.14	0.05
2018	Line-Haul Travel	UP Alhambra	1,717.13	0.83	4.85	21.83	0.02	0.54	0.54	0.50	1,870.10	0.15	0.05
2018	Line-Haul Travel	UP Yuma	1,893.93	0.91	5.34	24.08	0.02	0.60	0.60	0.55	2,062.65	0.17	0.05
2018	Line-Haul Travel	UP Mojave	132.55	0.06	0.37	1.69	0.00	0.04	0.04	0.04	144.36	0.01	0.00

Table B1-269. Line-haul Travel Between SCAB Boundaries and CA Border 8-hr Peak Period Emissions 2018

Year	Type	Segment	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)								
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	BNSF Cajon	16,371.46	7.89	46.20	208.14	0.18	5.19	5.19	4.78	17,829.88	1.44	0.47
2018	Line-Haul Travel	UP Yuma	9,872.06	4.76	27.86	125.51	0.11	3.13	3.13	2.88	10,751.50	0.87	0.28
2018	Line-Haul Travel	UP Mojave	871.06	0.42	2.46	11.07	0.01	0.28	0.28	0.25	948.66	0.08	0.02

Table B1-270. Line-haul Travel Total 8-hr Peak Period Emissions 2018

Year	Type	Region	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)								
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul Travel	Within SCAB boundaries	15,649	7.539	44.160	198.948	0.172	4.956	4.956	4.573	17,042.832	1.380	0.448
2018	Line-Haul Travel	Between SCAB Boundar	27,115	13.063	76.515	344.716	0.298	8.588	8.588	7.923	29,530.037	2.391	0.777

Analysis Year:	2018

Table B1-271. Line-haul In-yard Peak Daily Emissions (lbs/day) 2018

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Line Haul In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul	WBCT (On-Site)	6,908	3.328	19.495	87.829	0.076	2.188	2.188	2.019	7,523.851	0.609	0.198
2018	Line-Haul	UP ICTF Yard	2,765	1.332	7.802	35.149	0.030	0.876	0.876	0.808	3,011.073	0.244	0.079
2018	Line-Haul	BNSF Hobart & Commerce Yards	2,977	1.434	8.400	37.842	0.033	0.943	0.943	0.870	3,241.767	0.262	0.085
2018	Line-Haul	UP East LA Yard	152	0.073	0.428	1.928	0.002	0.048	0.048	0.044	165.188	0.013	0.004
2018	Line-Haul	UP LATC Yard	63	0.030	0.178	0.803	0.001	0.020	0.020	0.018	68.793	0.006	0.002
2018	Line-Haul	UP COI Yard	0	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.066	0.000	0.000
2018	Line-Haul	BNSF SB Yard	4	0.002	0.012	0.055	0.000	0.001	0.001	0.001	4.717	0.000	0.000
2018	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**5,961**	2.87	16.82	75.78	0.07	1.89	1.89	1.74	6,491.60	0.53	0.17

Table B1-272. Line-haul In-yard Annual Emissions (tons/yr) 2018

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Line Haul In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul	WBCT (On-Site)	1,634,472	0.394	2.306	10.390	0.009	0.259	0.259	0.239	890.038	0.072	0.023
2018	Line-Haul	UP ICTF Yard	654,122	0.158	0.923	4.158	0.004	0.104	0.104	0.096	356.197	0.029	0.009
2018	Line-Haul	BNSF Hobart & Commerce Yards	704,238	0.170	0.994	4.477	0.004	0.112	0.112	0.103	383.487	0.031	0.010
2018	Line-Haul	UP East LA Yard	35,885	0.009	0.051	0.228	0.000	0.006	0.006	0.005	19.541	0.002	0.001
2018	Line-Haul	UP LATC Yard	14,944	0.004	0.021	0.095	0.000	0.002	0.002	0.002	8.138	0.001	0.000
2018	Line-Haul	UP COI Yard	14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000
2018	Line-Haul	BNSF SB Yard	1,025	0.000	0.001	0.007	0.000	0.000	0.000	0.000	0.558	0.000	0.000
2018	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**1,410,228**	0.34	1.99	8.96	0.01	0.22	0.22	0.21	767.93	0.06	0.02

Peaking Factor:	236.591

Table B1-273. Line-haul In-yard Peak Hour Emissions (lbs/hr) 2018

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Peak Line Haul In-Yard Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul	WBCT (On-Site)	287.85	0.139	0.812	3.660	0.003	0.091	0.091	0.084	313.494	0.025	0.008
2018	Line-Haul	UP ICTF Yard	115.20	0.056	0.325	1.465	0.001	0.036	0.036	0.034	125.461	0.010	0.003
2018	Line-Haul	BNSF Hobart & Commerce Yards	124.03	0.060	0.350	1.577	0.001	0.039	0.039	0.036	135.074	0.011	0.004
2018	Line-Haul	UP East LA Yard	6.32	0.003	0.018	0.080	0.000	0.002	0.002	0.002	6.883	0.001	0.000
2018	Line-Haul	UP LATC Yard	2.63	0.001	0.007	0.033	0.000	0.001	0.001	0.001	2.866	0.000	0.000
2018	Line-Haul	UP COI Yard	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000
2018	Line-Haul	BNSF SB Yard	0.18	0.000	0.001	0.002	0.000	0.000	0.000	0.000	0.197	0.000	0.000
2018	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**248**	0.12	0.70	3.16	0.00	0.08	0.08	0.07	270.48	0.02	0.01

Table B1-274. Line-haul In-yard Eight-Hour Peak Emissions (lbs/hr) 2018

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Line Haul In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Line-Haul	WBCT (On-Site)	2,302.81	1.109	6.498	29.276	0.025	0.729	0.729	0.673	2,507.950	0.203	0.066
2018	Line-Haul	UP ICTF Yard	921.59	0.444	2.601	11.716	0.010	0.292	0.292	0.269	1,003.691	0.081	0.026
2018	Line-Haul	BNSF Hobart & Commerce Yards	992.20	0.478	2.800	12.614	0.011	0.314	0.314	0.290	1,080.589	0.087	0.028
2018	Line-Haul	UP East LA Yard	50.56	0.024	0.143	0.643	0.001	0.016	0.016	0.015	55.063	0.004	0.001
2018	Line-Haul	UP LATC Yard	21.06	0.010	0.059	0.268	0.000	0.007	0.007	0.006	22.931	0.002	0.001
2018	Line-Haul	UP COI Yard	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.000	0.000
2018	Line-Haul	BNSF SB Yard	1.44	0.001	0.004	0.018	0.000	0.000	0.000	0.000	1.572	0.000	0.000
2018	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**1,987**	0.96	5.61	25.26	0.02	0.63	0.63	0.58	2,163.87	0.18	0.06

Analysis Year:	2018

Table B1-275. Switchers In-yard Peak Daily Emissions (lbs/day) 2018

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Switcher In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Switchers	WBCT (On-Site)	1,094	0.581	4.345	10.614	0.014	0.090	0.090	0.083	1,613.780	0.121	0.041
2018	Switchers	UP ICTF Yard	299	0.159	1.189	2.905	0.004	0.025	0.025	0.023	441.701	0.033	0.011
2018	Switchers	BNSF Hobart & Commerce Yards	322	0.171	1.280	3.128	0.004	0.026	0.026	0.024	475.542	0.036	0.012
2018	Switchers	UP East LA Yard	16	0.009	0.065	0.159	0.000	0.001	0.001	0.001	24.232	0.002	0.001
2018	Switchers	UP LATC Yard	7	0.004	0.027	0.066	0.000	0.001	0.001	0.001	10.091	0.001	0.000
2018	Switchers	UP COI Yard	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000
2018	Switchers	BNSF SB Yard	0	0.000	0.002	0.005	0.000	0.000	0.000	0.000	0.692	0.000	0.000
2018	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**645**	0.34	2.56	6.26	0.01	0.05	0.05	0.05	952.27	0.07	0.02

Table B1-276. Switchers In-yard Annual Emissions (tons/yr) 2018

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Switcher In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Switchers	WBCT (On-Site)	258,721	0.069	0.514	1.256	0.002	0.011	0.011	0.010	190.903	0.014	0.005
2018	Switchers	UP ICTF Yard	70,813	0.019	0.141	0.344	0.000	0.003	0.003	0.003	52.251	0.004	0.001
2018	Switchers	BNSF Hobart & Commerce Yards	76,239	0.020	0.151	0.370	0.000	0.003	0.003	0.003	56.255	0.004	0.001
2018	Switchers	UP East LA Yard	3,885	0.001	0.008	0.019	0.000	0.000	0.000	0.000	2.867	0.000	0.000
2018	Switchers	UP LATC Yard	1,618	0.000	0.003	0.008	0.000	0.000	0.000	0.000	1.194	0.000	0.000
2018	Switchers	UP COI Yard	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
2018	Switchers	BNSF SB Yard	111	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.082	0.000	0.000
2018	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**152,668**	0.04	0.30	0.74	0.00	0.01	0.01	0.01	112.65	0.01	0.00

Peaking Factor:	236.591

Table B1-277. Switchers In-yard Peak Hour Emissions (lbs/hr) 2018

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Switcher In-Yard Peak Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Switchers	WBCT (On-Site)	45.56	0.024	0.181	0.442	0.001	0.004	0.004	0.003	67.241	0.005	0.002
2018	Switchers	UP ICTF Yard	12.47	0.007	0.050	0.121	0.000	0.001	0.001	0.001	18.404	0.001	0.000
2018	Switchers	BNSF Hobart & Commerce Yards	13.43	0.007	0.053	0.130	0.000	0.001	0.001	0.001	19.814	0.001	0.000
2018	Switchers	UP East LA Yard	0.68	0.000	0.003	0.007	0.000	0.000	0.000	0.000	1.010	0.000	0.000
2018	Switchers	UP LATC Yard	0.28	0.000	0.001	0.003	0.000	0.000	0.000	0.000	0.420	0.000	0.000
2018	Switchers	UP COI Yard	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2018	Switchers	BNSF SB Yard	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.029	0.000	0.000
2018	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**27**	0.01	0.11	0.26	0.00	0.00	0.00	0.00	39.68	0.00	0.00

Table B1-278. Switchers In-yard Eight-Hour Peak Emissions (lbs/hr) 2018

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Switcher In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2018	Switchers	WBCT (On-Site)	364.51	0.194	1.448	3.538	0.005	0.030	0.030	0.028	537.927	0.040	0.014
2018	Switchers	UP ICTF Yard	99.77	0.053	0.396	0.968	0.001	0.008	0.008	0.008	147.234	0.011	0.004
2018	Switchers	BNSF Hobart & Commerce Yards	107.41	0.057	0.427	1.043	0.001	0.009	0.009	0.008	158.514	0.012	0.004
2018	Switchers	UP East LA Yard	5.47	0.003	0.022	0.053	0.000	0.000	0.000	0.000	8.077	0.001	0.000
2018	Switchers	UP LATC Yard	2.28	0.001	0.009	0.022	0.000	0.000	0.000	0.000	3.364	0.000	0.000
2018	Switchers	UP COI Yard	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000
2018	Switchers	BNSF SB Yard	0.16	0.000	0.001	0.002	0.000	0.000	0.000	0.000	0.231	0.000	0.000
2018	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**215**	0.11	0.85	2.09	0.00	0.02	0.02	0.02	317.42	0.02	0.01

Year	2023

Table B1-279. Onsite Rail Operations 2023 - All Scenarios

Parameters	2023	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.979	1.265
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	16

On-site Switchers	**WBCT**
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

Table B1-280. China Shipping On -site Switching Activity 2023 - All Scenarios

Activity	2023
Annual Throughput WBCT	2,687,975
China Shipping Fraction of Throughput	0.57
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**752**

Table B1-281. Off -site Rail Operations 2023 - All Scenarios

Parameters	2023 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		1.8	3.6	25.1		10.6
East River Bank		0.3	0.5	1.3		
BNSF San Bernardino		16.6	33.7	46.5		
BNSF Cajon		6.3	12.9	16.7		
UP Los Angeles		7.5	15.1	15.9		
UP Alhambra		6.4	13.0	16.9		
UP Yuma		7.1	14.5	18.8		
UP Mojave		0.5	1.0	1.3		
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.1	0.3			
BNSF Hobart & Commerce Yards		0.2	0.5			
UP East LA Yard		0.1	0.2			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	4	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.3	0.5	0.7		na
UP Yuma		0.2	0.4	0.5		na
UP Mojave		0.0	0.0	0.0		na
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	74,221
BNSF Hobart & Commerce Yards	136,911
UP East LA Yard	62,689
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on data collected during development of the 2001 POLA emissions inventory

Table B1-282. China Shipping Linehaul In-yard Activity 2023 - All Scenarios

Parameters	2023 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	8,821
China Shipping Related Off-dock Activity	
UP ICTF Yard	2,875
BNSF Hobart & Commerce Yards	5,304
UP East LA Yard	2,429
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-283. China Shipping Line-haul Traveling 2023 - All Scenarios

	2023
Fuel Productivity Factor (gross ton-miles/gal)	784

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

Table B1-284. Line-haul Travel Within SCAB 2023 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	289,048	7,666
East River Bank	18,220	483
BNSF San Bernardino	846,032	22,438
BNSF Cajon	313,013	8,302
UP Los Angeles	335,676	8,903
UP Alhambra	317,591	8,423
UP Yuma	352,286	9,343
UP Mojave	24,656	654

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-285. Line-haul Travel from SCAB Border to CA Border 2023 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	2,410,701	63,935
UP Yuma	1,836,278	48,701
UP Mojave	162,024	4,297

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-286. China Shipping Switchers In-yard Activity 2023 - All Scenarios

	2023
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	752
China Shipping-Related Off-dock Activity	
UP ICTF Yard	245
BNSF Hobart & Commerce Yards	451
UP East LA Yard	207
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Analysis Year:	2023

Table B1-287. Line-haul Travel Within SCAB Boundaries Peak Day Emissions 2023

Year	Type	Subdivision	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	Alameda Corridor	7,666	2.781	21.633	77.821	0.084	1.771	1.771	1.651	8,349	0.676	0.220
2023	Line-Haul Travel	East River Bank	483	0.175	1.364	4.905	0.005	0.112	0.112	0.104	526	0.043	0.014
2023	Line-Haul Travel	BNSF San Bernardino	22,438	8.141	63.318	227.779	0.247	5.184	5.184	4.832	24,437	1.979	0.643
2023	Line-Haul Travel	BNSF Cajon	8,302	3.012	23.426	84.273	0.091	1.918	1.918	1.788	9,041	0.732	0.238
2023	Line-Haul Travel	UP Los Angeles	8,903	3.230	25.122	90.375	0.098	2.057	2.057	1.917	9,696	0.785	0.255
2023	Line-Haul Travel	UP Alhambra	8,423	3.056	23.769	85.506	0.093	1.946	1.946	1.814	9,173	0.743	0.241
2023	Line-Haul Travel	UP Yuma	9,343	3.390	26.366	94.846	0.103	2.159	2.159	2.012	10,175	0.824	0.268
2023	Line-Haul Travel	UP Mojave	654	0.237	1.845	6.638	0.007	0.151	0.151	0.141	712	0.058	0.019

Table B1-288. Line-haul Travel Between SCAB Boundaries and CA Border Peak Day Emissions 2023

Year	Type	Segment	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	BNSF Cajon	63,935	23.197	180.420	649.037	0.704	14.771	14.771	13.767	69,631	5.638	1.832
2023	Line-Haul Travel	UP Yuma	48,701	17.669	137.430	494.384	0.536	11.251	11.251	10.487	53,039	4.295	1.396
2023	Line-Haul Travel	UP Mojave	4,297	1.559	12.126	43.622	0.047	0.993	0.993	0.925	4,680	0.379	0.123

Table B1-289. Line-haul Travel Total Peak Daily Emissions (lbs/day) 2023

Year	Type	Region	Peak Day Work from Locomotives (hp-hr/day)	Peak Daily Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	Within SCAB boundaries	66,211	24	187	672	1	15	15	14	72,110	6	2
2023	Line-Haul Travel	Between SCAB Boundar	116,933	42	330	1,187	1	27	27	25	127,350	10	3

Peaking Factor:	246.953

Annual Emissions (tons/yr):

Table B1-290. Line-haul Travel Within SCAB Boundaries Annual Emissions 2023

Year	Type	Subdivision	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	Alameda Corridor	1,893,138	0.343	2.671	9.609	0.010	0.219	0.219	0.204	1,030.892	0.083	0.027
2023	Line-Haul Travel	East River Bank	119,331	0.022	0.168	0.606	0.001	0.014	0.014	0.013	64.981	0.005	0.002
2023	Line-Haul Travel	BNSF San Bernardino	5,541,146	1.005	7.818	28.125	0.030	0.640	0.640	0.597	3,017.385	0.244	0.079
2023	Line-Haul Travel	BNSF Cajon	2,050,097	0.372	2.893	10.406	0.011	0.237	0.237	0.221	1,116.363	0.090	0.029
2023	Line-Haul Travel	UP Los Angeles	2,198,533	0.399	3.102	11.159	0.012	0.254	0.254	0.237	1,197.193	0.097	0.032
2023	Line-Haul Travel	UP Alhambra	2,080,087	0.377	2.935	10.558	0.011	0.240	0.240	0.224	1,132.694	0.092	0.030
2023	Line-Haul Travel	UP Yuma	2,307,320	0.419	3.256	11.711	0.013	0.267	0.267	0.248	1,256.432	0.102	0.033
2023	Line-Haul Travel	UP Mojave	161,485	0.029	0.228	0.820	0.001	0.019	0.019	0.017	87.936	0.007	0.002

Table B1-291. Line-haul Travel Between SCAB Boundaries and CA Border Annual Emissions 2023

Year	Type	Segment	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	BNSF Cajon	15,789,051	2.864	22.278	80.141	0.087	1.824	1.824	1.700	8,597.796	0.696	0.226
2023	Line-Haul Travel	UP Yuma	12,026,824	2.182	16.969	61.045	0.066	1.389	1.389	1.295	6,549.106	0.530	0.172
2023	Line-Haul Travel	UP Mojave	1,061,190	0.193	1.497	5.386	0.006	0.123	0.123	0.114	577.862	0.047	0.015

Table B1-292. Line-haul Travel Total Annual Emissions (tons/yr) 2023

Year	Type	Region	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	Within SCAB boundaries	16,351,137	2.966	23.071	82.994	0.090	1.889	1.889	1.760	8,903.875	0.721	0.234
2023	Line-Haul Travel	Between SCAB Boundar	28,877,065	5.239	40.744	146.572	0.159	3.336	3.336	3.109	15,724.764	1.273	0.414

One Hour Peak Emissions (lbs/hr):

Table B1-293. Line-haul Travel Within SCAB Boundaries Peak Hourly Emissions 2023

Year	Type	Subdivision	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	Alameda Corridor	319.42	0.12	0.90	3.24	0.00	0.07	0.07	0.07	347.87	0.03	0.01
2023	Line-Haul Travel	East River Bank	20.13	0.01	0.06	0.20	0.00	0.00	0.00	0.00	21.93	0.00	0.00
2023	Line-Haul Travel	BNSF San Bernardino	934.92	0.34	2.64	9.49	0.01	0.22	0.22	0.20	1,018.20	0.08	0.03
2023	Line-Haul Travel	BNSF Cajon	345.90	0.13	0.98	3.51	0.00	0.08	0.08	0.07	376.71	0.03	0.01
2023	Line-Haul Travel	UP Los Angeles	370.94	0.13	1.05	3.77	0.00	0.09	0.09	0.08	403.99	0.03	0.01
2023	Line-Haul Travel	UP Alhambra	350.96	0.13	0.99	3.56	0.00	0.08	0.08	0.08	382.22	0.03	0.01
2023	Line-Haul Travel	UP Yuma	389.30	0.14	1.10	3.95	0.00	0.09	0.09	0.08	423.98	0.03	0.01
2023	Line-Haul Travel	UP Mojave	27.25	0.01	0.08	0.28	0.00	0.01	0.01	0.01	29.67	0.00	0.00

Table B1-294. Line-haul Travel Between SCAB Boundaries and CA Border Peak Hourly Emissions 2023

Year	Type	Segment	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	BNSF Cajon	2,663.97	0.97	7.52	27.04	0.03	0.62	0.62	0.57	2,901.29	0.23	0.08
2023	Line-Haul Travel	UP Yuma	2,029.20	0.74	5.73	20.60	0.02	0.47	0.47	0.44	2,209.97	0.18	0.06
2023	Line-Haul Travel	UP Mojave	179.05	0.06	0.51	1.82	0.00	0.04	0.04	0.04	195.00	0.02	0.01

Table B1-295. Line-haul Travel Total Peak Hourly Emissions 2023

Year	Type	Region	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	Within SCAB boundaries	2,759	1.001	7.785	28.006	0.030	0.637	0.637	0.594	3,004.573	0.243	0.079
2023	Line-Haul Travel	Between SCAB Boundar	4,872	1.768	13.749	49.460	0.054	1.126	1.126	1.049	5,306.252	0.430	0.140

Eight-Hour Peak Period Emissions (lbs/hr):

Table B1-296. Line-haul Travel Within SCAB Boundaries 8-hr Peak Period Emissions 2023

Year	Type	Subdivision	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	Alameda Corridor	2,555.32	0.93	7.21	25.94	0.03	0.59	0.59	0.55	2,782.96	0.23	0.07
2023	Line-Haul Travel	East River Bank	161.07	0.06	0.45	1.64	0.00	0.04	0.04	0.03	175.42	0.01	0.00
2023	Line-Haul Travel	BNSF San Bernardino	7,479.34	2.71	21.11	75.93	0.08	1.73	1.73	1.61	8,145.63	0.66	0.21
2023	Line-Haul Travel	BNSF Cajon	2,767.18	1.00	7.81	28.09	0.03	0.64	0.64	0.60	3,013.69	0.24	0.08
2023	Line-Haul Travel	UP Los Angeles	2,967.54	1.08	8.37	30.12	0.03	0.69	0.69	0.64	3,231.90	0.26	0.09
2023	Line-Haul Travel	UP Alhambra	2,807.66	1.02	7.92	28.50	0.03	0.65	0.65	0.60	3,057.78	0.25	0.08
2023	Line-Haul Travel	UP Yuma	3,114.38	1.13	8.79	31.62	0.03	0.72	0.72	0.67	3,391.82	0.27	0.09
2023	Line-Haul Travel	UP Mojave	217.97	0.08	0.62	2.21	0.00	0.05	0.05	0.05	237.39	0.02	0.01

Table B1-297. Line-haul Travel Between SCAB Boundaries and CA Border 8-hr Peak Period Emissions 2023

Year	Type	Segment	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	BNSF Cajon	21,311.78	7.73	60.14	216.35	0.23	4.92	4.92	4.59	23,210.30	1.88	0.61
2023	Line-Haul Travel	UP Yuma	16,233.59	5.89	45.81	164.79	0.18	3.75	3.75	3.50	17,679.74	1.43	0.47
2023	Line-Haul Travel	UP Mojave	1,432.38	0.52	4.04	14.54	0.02	0.33	0.33	0.31	1,559.98	0.13	0.04

Table B1-298. Line-haul Travel Total 8-hr Peak Period Emissions 2023

Year	Type	Region	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul Travel	Within SCAB boundaries	22,070	8.008	62.281	224.048	0.243	5.099	5.099	4.752	24,036.585	1.946	0.633
2023	Line-Haul Travel	Between SCAB Boundar	38,978	14.142	109.992	395.681	0.429	9.005	9.005	8.393	42,450.017	3.437	1.117

Analysis Year:	2023

Table B1-299. Line-haul In-yard Peak Daily Emissions (lbs/day) 2023

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Line Haul In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul	WBCT (On-Site)	8,821	3.200	24.891	89.542	0.097	2.038	2.038	1.899	9,606.380	0.778	0.253
2023	Line-Haul	UP ICTF Yard	2,875	1.043	8.114	29.190	0.032	0.664	0.664	0.619	3,131.596	0.254	0.082
2023	Line-Haul	BNSF Hobart & Commerce Yards	5,304	1.924	14.968	53.845	0.058	1.225	1.225	1.142	5,776.634	0.468	0.152
2023	Line-Haul	UP East LA Yard	2,429	0.881	6.854	24.655	0.027	0.561	0.561	0.523	2,645.038	0.214	0.070
2023	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**10,608**	3.85	29.94	107.69	0.12	2.45	2.45	2.28	11,553.27	0.94	0.30

Table B1-300. Line-haul In-yard Annual Emissions (tons/yr) 2023

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Line Haul In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul	WBCT (On-Site)	2,178,280	0.395	3.073	11.056	0.012	0.252	0.252	0.235	1,186.164	0.096	0.031
2023	Line-Haul	UP ICTF Yard	710,100	0.129	1.002	3.604	0.004	0.082	0.082	0.076	386.679	0.031	0.010
2023	Line-Haul	BNSF Hobart & Commerce Yards	1,309,872	0.238	1.848	6.649	0.007	0.151	0.151	0.141	713.280	0.058	0.019
2023	Line-Haul	UP East LA Yard	599,772	0.109	0.846	3.044	0.003	0.069	0.069	0.065	326.601	0.026	0.009
2023	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**2,619,744**	0.48	3.70	13.30	0.01	0.30	0.30	0.28	1,426.56	0.12	0.04

Peaking Factor:	246.953

Table B1-301. Line-haul In-yard Peak Hour Emissions (lbs/hr) 2023

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Peak Line Haul In-Yard Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul	WBCT (On-Site)	367.53	0.133	1.037	3.731	0.004	0.085	0.085	0.079	400.266	0.032	0.011
2023	Line-Haul	UP ICTF Yard	119.81	0.043	0.338	1.216	0.001	0.028	0.028	0.026	130.483	0.011	0.003
2023	Line-Haul	BNSF Hobart & Commerce Yards	221.01	0.080	0.624	2.244	0.002	0.051	0.051	0.048	240.693	0.019	0.006
2023	Line-Haul	UP East LA Yard	101.20	0.037	0.286	1.027	0.001	0.023	0.023	0.022	110.210	0.009	0.003
2023	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**442**	0.16	1.25	4.49	0.00	0.10	0.10	0.10	481.39	0.04	0.01

Table B1-302. Line-haul In-yard Eight-Hour Peak Emissions (lbs/hr) 2023

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Line Haul In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Line-Haul	WBCT (On-Site)	2,940.20	1.067	8.297	29.847	0.032	0.679	0.679	0.633	3,202.127	0.259	0.084
2023	Line-Haul	UP ICTF Yard	958.48	0.348	2.705	9.730	0.011	0.221	0.221	0.206	1,043.865	0.085	0.027
2023	Line-Haul	BNSF Hobart & Commerce Yards	1,768.04	0.641	4.989	17.948	0.019	0.408	0.408	0.381	1,925.545	0.156	0.051
2023	Line-Haul	UP East LA Yard	809.56	0.294	2.285	8.218	0.009	0.187	0.187	0.174	881.679	0.071	0.023
2023	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**3,536**	1.28	9.98	35.90	0.04	0.82	0.82	0.76	3,851.09	0.31	0.10

Analysis Year:	2023

Table B1-303. Switchers In-yard Peak Daily Emissions (lbs/day) 2023

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Switcher In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Switchers	WBCT (On-Site)	752	0.400	2.989	7.301	0.010	0.062	0.062	0.057	1,110.071	0.083	0.028
2023	Switchers	UP ICTF Yard	245	0.130	0.972	2.375	0.003	0.020	0.020	0.019	361.071	0.027	0.009
2023	Switchers	BNSF Hobart & Commerce Yards	451	0.240	1.793	4.381	0.006	0.037	0.037	0.034	666.042	0.050	0.017
2023	Switchers	UP East LA Yard	207	0.110	0.821	2.006	0.003	0.017	0.017	0.016	304.971	0.023	0.008
2023	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**903**	0.48	3.59	8.76	0.01	0.07	0.07	0.07	1,332.08	0.10	0.03

Table B1-304. Switchers In-yard Annual Emissions (tons/yr) 2023

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Switcher In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Switchers	WBCT (On-Site)	185,761	0.049	0.369	0.902	0.001	0.008	0.008	0.007	137.068	0.010	0.003
2023	Switchers	UP ICTF Yard	60,422	0.016	0.120	0.293	0.000	0.002	0.002	0.002	44.584	0.003	0.001
2023	Switchers	BNSF Hobart & Commerce Yards	111,457	0.030	0.221	0.541	0.001	0.005	0.005	0.004	82.241	0.006	0.002
2023	Switchers	UP East LA Yard	51,034	0.014	0.101	0.248	0.000	0.002	0.002	0.002	37.657	0.003	0.001
2023	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**222,913**	0.06	0.44	1.08	0.00	0.01	0.01	0.01	164.48	0.01	0.00

Peaking Factor:	246.953

Table B1-305. Switchers In-yard Peak Hour Emissions (lbs/hr) 2023

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Switcher In-Yard Peak Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Switchers	WBCT (On-Site)	31.34	0.017	0.125	0.304	0.000	0.003	0.003	0.002	46.253	0.003	0.001
2023	Switchers	UP ICTF Yard	10.19	0.005	0.041	0.099	0.000	0.001	0.001	0.001	15.045	0.001	0.000
2023	Switchers	BNSF Hobart & Commerce Yards	18.81	0.010	0.075	0.183	0.000	0.002	0.002	0.001	27.752	0.002	0.001
2023	Switchers	UP East LA Yard	8.61	0.005	0.034	0.084	0.000	0.001	0.001	0.001	12.707	0.001	0.000
2023	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**38**	0.02	0.15	0.37	0.00	0.00	0.00	0.00	55.50	0.00	0.00

Table B1-306. Switchers In-yard Eight-Hour Peak Emissions (lbs/hr) 2023

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Switcher In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2023	Switchers	WBCT (On-Site)	250.74	0.133	0.996	2.434	0.003	0.021	0.021	0.019	370.024	0.028	0.009
2023	Switchers	UP ICTF Yard	81.56	0.043	0.324	0.792	0.001	0.007	0.007	0.006	120.357	0.009	0.003
2023	Switchers	BNSF Hobart & Commerce Yards	150.44	0.080	0.598	1.460	0.002	0.012	0.012	0.011	222.014	0.017	0.006
2023	Switchers	UP East LA Yard	68.89	0.037	0.274	0.669	0.001	0.006	0.006	0.005	101.657	0.008	0.003
2023	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2023	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**301**	0.16	1.20	2.92	0.00	0.02	0.02	0.02	444.03	0.03	0.01

Year	2030

Table B1-307. Onsite Rail Operations 2030 - All Scenarios

Parameters	2030	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.990	1.221
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	16

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

Table B1-308. China Shipping On -site Switching Activity 2030 - All Scenarios

Activity	2030
Annual Throughput WBCT	3,209,451
China Shipping Fraction of Throughput	0.53
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**703**

Table B1-309. Off -site Rail Operations 2030 - All Scenarios

Parameters	2030 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		3.7	7.5	26.4		10.3
East River Bank		0.5	1.1	1.3		
BNSF San Bernardino		19.8	40.2	48.6		
BNSF Cajon		7.5	15.1	17.4		
UP Los Angeles		7.3	14.8	16.6		
UP Alhambra		7.6	15.3	17.7		
UP Yuma		8.4	17.0	19.6		
UP Mojave		0.6	1.2	1.4		
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.3	0.5			
BNSF Hobart & Commerce Yards		0.3	0.6			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	4	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.3	0.6	0.7		na
UP Yuma		0.2	0.5	0.6		na
UP Mojave		0.0	0.0	0.0		na
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	153,068
BNSF Hobart & Commerce Yards	161,125
UP East LA Yard	8,056
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on data collected during development of the 2001 POLA emissions inventory

Table B1-310. China Shipping Line-haul In-yard Activity 2030 - All Scenarios

Parameters	2030 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	8,823
China Shipping Related Off-dock Activity	
UP ICTF Yard	5,930
BNSF Hobart & Commerce Yards	6,242
UP East LA Yard	312
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-311. China Shipping Line -haul Traveling 2030 - All Scenarios

	2030
Fuel Productivity Factor (gross ton-miles/gal)	841

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

Table B1-312. Line-haul Travel within SCAB 2030 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	349,673	8,650
East River Bank	26,075	645
BNSF San Bernardino	947,100	23,428
BNSF Cajon	348,878	8,630
UP Los Angeles	337,492	8,349
UP Alhambra	353,982	8,756
UP Yuma	392,651	9,713
UP Mojave	27,481	680

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-313. Line-haul Travel from SCAB Border to CA Border 2030 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	2,686,924	66,467
UP Yuma	2,046,681	50,629
UP Mojave	180,590	4,467

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-314. China Shipping Switchers In-yard Activity 2030 - All Scenarios

	2030
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	703
China Shipping-Related Off-dock Activity	
UP ICTF Yard	452
BNSF Hobart & Commerce Yards	476
UP East LA Yard	24
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Analysis Year:	2030

Table B1-315. Line-haul Travel Within SCAB Boundaries Peak Day Emissions 2030

Year	Type	Subdivision	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	Alameda Corridor	8,650	2.086	24.409	60.805	0.095	1.242	1.242	1.180	9,420	0.763	0.248
2030	Line-Haul Travel	East River Bank	645	0.156	1.820	4.534	0.007	0.093	0.093	0.088	702	0.057	0.018
2030	Line-Haul Travel	BNSF San Bernardino	23,428	5.650	66.113	164.691	0.258	3.365	3.365	3.196	25,516	2.066	0.671
2030	Line-Haul Travel	BNSF Cajon	8,630	2.081	24.354	60.666	0.095	1.240	1.240	1.177	9,399	0.761	0.247
2030	Line-Haul Travel	UP Los Angeles	8,349	2.013	23.559	58.686	0.092	1.199	1.199	1.139	9,092	0.736	0.239
2030	Line-Haul Travel	UP Alhambra	8,756	2.112	24.710	61.554	0.096	1.258	1.258	1.194	9,537	0.772	0.251
2030	Line-Haul Travel	UP Yuma	9,713	2.342	27.409	68.278	0.107	1.395	1.395	1.325	10,578	0.857	0.278
2030	Line-Haul Travel	UP Mojave	680	0.164	1.918	4.779	0.007	0.098	0.098	0.093	740	0.060	0.019

Table B1-316. Line-haul Travel Between SCAB Boundaries and CA Border Peak Day Emissions 2030

Year	Type	Segment	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	BNSF Cajon	66,467	16.030	187.563	467.228	0.732	9.546	9.546	9.067	72,388	5.861	1.905
2030	Line-Haul Travel	UP Yuma	50,629	12.210	142.870	355.896	0.557	7.272	7.272	6.906	55,139	4.465	1.451
2030	Line-Haul Travel	UP Mojave	4,467	1.077	12.606	31.403	0.049	0.642	0.642	0.609	4,865	0.394	0.128

Table B1-317. Line-haul Travel Total Peak Daily Emissions (lbs/day) 2030

Year	Type	Region	Peak Day Work from Locomotives (hp-hr/day)	Peak Daily Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	Within SCAB boundaries	68,851	17	194	484	1	10	10	9	74,985	6	2
2030	Line-Haul Travel	Between SCAB Boundar	121,563	29	343	855	1	17	17	17	132,392	11	3

Peaking Factor:	246.953

Annual Emissions (tons/yr):

Table B1-318. Line-haul Travel Within SCAB Boundaries Annual Emissions 2030

Year	Type	Subdivision	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	Alameda Corridor	2,136,120	0.258	3.014	7.508	0.012	0.153	0.153	0.146	1,163.206	0.094	0.031
2030	Line-Haul Travel	East River Bank	159,290	0.019	0.225	0.560	0.001	0.011	0.011	0.011	86.740	0.007	0.002
2030	Line-Haul Travel	BNSF San Bernardino	5,785,741	0.698	8.163	20.335	0.032	0.415	0.415	0.395	3,150.577	0.255	0.083
2030	Line-Haul Travel	BNSF Cajon	2,131,261	0.257	3.007	7.491	0.012	0.153	0.153	0.145	1,160.560	0.094	0.031
2030	Line-Haul Travel	UP Los Angeles	2,061,708	0.249	2.909	7.246	0.011	0.148	0.148	0.141	1,122.686	0.091	0.030
2030	Line-Haul Travel	UP Alhambra	2,162,439	0.261	3.051	7.600	0.012	0.155	0.155	0.147	1,177.538	0.095	0.031
2030	Line-Haul Travel	UP Yuma	2,398,668	0.289	3.384	8.431	0.013	0.172	0.172	0.164	1,306.175	0.106	0.034
2030	Line-Haul Travel	UP Mojave	167,879	0.020	0.237	0.590	0.001	0.012	0.012	0.011	91.417	0.007	0.002

Table B1-319. Line-haul Between SCAB Boundaries and CA Border Annual Emissions 2030

Year	Type	Segment	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	BNSF Cajon	16,414,148	1.979	23.160	57.692	0.090	1.179	1.179	1.120	8,938.187	0.724	0.235
2030	Line-Haul Travel	UP Yuma	12,502,972	1.508	17.641	43.945	0.069	0.898	0.898	0.853	6,808.389	0.551	0.179
2030	Line-Haul Travel	UP Mojave	1,103,203	0.133	1.557	3.877	0.006	0.079	0.079	0.075	600.740	0.049	0.016

Table B1-320. Line-haul Travel Total Annual Emissions (tons/yr) 2030

Year	Type	Region	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	Within SCAB boundaries	17,003,105	2.050	23.991	59.762	0.094	1.221	1.221	1.160	9,258.898	0.750	0.244
2030	Line-Haul Travel	Between SCAB Boundar	30,020,323	3.620	42.357	105.514	0.165	2.156	2.156	2.047	16,347.316	1.324	0.430

One Hour Peak Emissions (lbs/hr):

Table B1-321. Line-haul Travel Within SCAB Boundaries Peak Hourly Emissions 2030

Year	Type	Subdivision	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	Alameda Corridor	360.41	0.09	1.02	2.53	0.00	0.05	0.05	0.05	392.52	0.03	0.01
2030	Line-Haul Travel	East River Bank	26.88	0.01	0.08	0.19	0.00	0.00	0.00	0.00	29.27	0.00	0.00
2030	Line-Haul Travel	BNSF San Bernardino	976.19	0.24	2.75	6.86	0.01	0.14	0.14	0.13	1,063.15	0.09	0.03
2030	Line-Haul Travel	BNSF Cajon	359.59	0.09	1.01	2.53	0.00	0.05	0.05	0.05	391.63	0.03	0.01
2030	Line-Haul Travel	UP Los Angeles	347.86	0.08	0.98	2.45	0.00	0.05	0.05	0.05	378.85	0.03	0.01
2030	Line-Haul Travel	UP Alhambra	364.85	0.09	1.03	2.56	0.00	0.05	0.05	0.05	397.35	0.03	0.01
2030	Line-Haul Travel	UP Yuma	404.71	0.10	1.14	2.84	0.00	0.06	0.06	0.06	440.76	0.04	0.01
2030	Line-Haul Travel	UP Mojave	28.32	0.01	0.08	0.20	0.00	0.00	0.00	0.00	30.85	0.00	0.00

Table B1-322. Line-haul Travel Between SCAB Boundaries and CA Border Peak Hourly Emissions 2030

Year	Type	Segment	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	BNSF Cajon	2,769.44	0.67	7.82	19.47	0.03	0.40	0.40	0.38	3,016.15	0.24	0.08
2030	Line-Haul Travel	UP Yuma	2,109.54	0.51	5.95	14.83	0.02	0.30	0.30	0.29	2,297.46	0.19	0.06
2030	Line-Haul Travel	UP Mojave	186.14	0.04	0.53	1.31	0.00	0.03	0.03	0.03	202.72	0.02	0.01

Table B1-323. Line-haul Travel Total Peak Hourly Emissions 2030

Year	Type	Region	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	Within SCAB boundaries	2,869	0.692	8.096	20.166	0.032	0.412	0.412	0.391	3,124.374	0.253	0.082
2030	Line-Haul Travel	Between SCAB Boundar	5,065	1.222	14.293	35.605	0.056	0.727	0.727	0.691	5,516.329	0.447	0.145

Eight-Hour Peak Period Emissions (lbs/hr):

Table B1-324. Line-haul Travel Within SCAB Boundaries 8-hr Peak Period Emissions 2030

Year	Type	Subdivision	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	Alameda Corridor	2,883.30	0.70	8.14	20.27	0.03	0.41	0.41	0.39	3,140.15	0.25	0.08
2030	Line-Haul Travel	East River Bank	215.01	0.05	0.61	1.51	0.00	0.03	0.03	0.03	234.16	0.02	0.01
2030	Line-Haul Travel	BNSF San Bernardino	7,809.49	1.88	22.04	54.90	0.09	1.12	1.12	1.07	8,505.19	0.69	0.22
2030	Line-Haul Travel	BNSF Cajon	2,876.74	0.69	8.12	20.22	0.03	0.41	0.41	0.39	3,133.01	0.25	0.08
2030	Line-Haul Travel	UP Los Angeles	2,782.86	0.67	7.85	19.56	0.03	0.40	0.40	0.38	3,030.76	0.25	0.08
2030	Line-Haul Travel	UP Alhambra	2,918.82	0.70	8.24	20.52	0.03	0.42	0.42	0.40	3,178.84	0.26	0.08
2030	Line-Haul Travel	UP Yuma	3,237.68	0.78	9.14	22.76	0.04	0.47	0.47	0.44	3,526.10	0.29	0.09
2030	Line-Haul Travel	UP Mojave	226.60	0.05	0.64	1.59	0.00	0.03	0.03	0.03	246.79	0.02	0.01

Table B1-325. Line-haul Travel Between SCAB Boundaries and CA Border 8-hr Peak Period Emissions 2030

Year	Type	Segment	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	BNSF Cajon	22,155.53	5.34	62.52	155.74	0.24	3.18	3.18	3.02	24,129.21	1.95	0.63
2030	Line-Haul Travel	UP Yuma	16,876.29	4.07	47.62	118.63	0.19	2.42	2.42	2.30	18,379.69	1.49	0.48
2030	Line-Haul Travel	UP Mojave	1,489.08	0.36	4.20	10.47	0.02	0.21	0.21	0.20	1,621.74	0.13	0.04

Table B1-326. Line-haul Travel Total 8-hr Peak Period Emissions 2030

Year	Type	Region	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul Travel	Within SCAB boundaries	22,950	5.535	64.764	161.331	0.253	3.296	3.296	3.131	24,994.994	2.024	0.658
2030	Line-Haul Travel	Between SCAB Boundar	40,521	9.772	114.347	284.842	0.446	5.820	5.820	5.527	44,130.635	3.573	1.161

Analysis Year:	2030

Table B1-327. Line-haul In-yard Peak Daily Emissions (lbs/day) 2030

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Line Haul In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul	WBCT (On-Site)	8,823	2.128	24.898	62.021	0.097	1.267	1.267	1.204	9,608.969	0.778	0.253
2030	Line-Haul	UP ICTF Yard	5,930	1.430	16.734	41.686	0.065	0.852	0.852	0.809	6,458.378	0.523	0.170
2030	Line-Haul	BNSF Hobart & Commerce Yards	6,242	1.505	17.615	43.880	0.069	0.897	0.897	0.851	6,798.292	0.550	0.179
2030	Line-Haul	UP East LA Yard	312	0.075	0.881	2.194	0.003	0.045	0.045	0.043	339.915	0.028	0.009
2030	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**12,484**	3.01	35.23	87.76	0.14	1.79	1.79	1.70	13,596.58	1.10	0.36

Table B1-328. Line-haul In-yard Annual Emissions (tons/yr) 2030

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Line Haul In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul	WBCT (On-Site)	2,178,867	0.263	3.074	7.658	0.012	0.156	0.156	0.149	1,186.484	0.096	0.031
2030	Line-Haul	UP ICTF Yard	1,464,459	0.177	2.066	5.147	0.008	0.105	0.105	0.100	797.459	0.065	0.021
2030	Line-Haul	BNSF Hobart & Commerce Yards	1,541,536	0.186	2.175	5.418	0.008	0.111	0.111	0.105	839.431	0.068	0.022
2030	Line-Haul	UP East LA Yard	77,077	0.009	0.109	0.271	0.000	0.006	0.006	0.005	41.972	0.003	0.001
2030	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**3,083,073**	0.37	4.35	10.84	0.02	0.22	0.22	0.21	1,678.86	0.14	0.04

Peaking Factor:	246.953

Table B1-329. Line-haul In-yard Peak Hour Emissions (lbs/hr) 2030

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Peak Line Haul In-Yard Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul	WBCT (On-Site)	367.62	0.089	1.037	2.584	0.004	0.053	0.053	0.050	400.374	0.032	0.011
2030	Line-Haul	UP ICTF Yard	247.09	0.060	0.697	1.737	0.003	0.035	0.035	0.034	269.099	0.022	0.007
2030	Line-Haul	BNSF Hobart & Commerce Yards	260.09	0.063	0.734	1.828	0.003	0.037	0.037	0.035	283.262	0.023	0.007
2030	Line-Haul	UP East LA Yard	13.00	0.003	0.037	0.091	0.000	0.002	0.002	0.002	14.163	0.001	0.000
2030	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**520**	0.13	1.47	3.66	0.01	0.07	0.07	0.07	566.52	0.05	0.01

Table B1-330. Line-haul In-yard Eight-Hour Peak Emissions (lbs/hr) 2030

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Line Haul In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Line-Haul	WBCT (On-Site)	2,941.00	0.709	8.299	20.674	0.032	0.422	0.422	0.401	3,202.990	0.259	0.084
2030	Line-Haul	UP ICTF Yard	1,976.70	0.477	5.578	13.895	0.022	0.284	0.284	0.270	2,152.793	0.174	0.057
2030	Line-Haul	BNSF Hobart & Commerce Yards	2,080.74	0.502	5.872	14.627	0.023	0.299	0.299	0.284	2,266.097	0.183	0.060
2030	Line-Haul	UP East LA Yard	104.04	0.025	0.294	0.731	0.001	0.015	0.015	0.014	113.305	0.009	0.003
2030	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**4,161**	1.00	11.74	29.25	0.05	0.60	0.60	0.57	4,532.19	0.37	0.12

Analysis Year:	2030

Table B1-331. Switchers In-yard Peak Daily Emissions (lbs/day) 2030

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Switcher In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Switchers	WBCT (On-Site)	703	0.374	2.795	6.827	0.009	0.058	0.058	0.053	1,038.048	0.078	0.026
2030	Switchers	UP ICTF Yard	452	0.240	1.796	4.386	0.006	0.037	0.037	0.034	666.894	0.050	0.017
2030	Switchers	BNSF Hobart & Commerce Yards	476	0.253	1.890	4.617	0.006	0.039	0.039	0.036	701.994	0.052	0.018
2030	Switchers	UP East LA Yard	24	0.013	0.095	0.231	0.000	0.002	0.002	0.002	35.100	0.003	0.001
2030	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**951**	0.51	3.78	9.23	0.01	0.08	0.08	0.07	1,403.99	0.10	0.04

Table B1-332. Switchers In-yard Annual Emissions (tons/yr) 2030

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Switcher In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Switchers	WBCT (On-Site)	173,709	0.046	0.345	0.843	0.001	0.007	0.007	0.007	128.175	0.010	0.003
2030	Switchers	UP ICTF Yard	111,599	0.030	0.222	0.542	0.001	0.005	0.005	0.004	82.346	0.006	0.002
2030	Switchers	BNSF Hobart & Commerce Yards	117,473	0.031	0.233	0.570	0.001	0.005	0.005	0.004	86.680	0.006	0.002
2030	Switchers	UP East LA Yard	5,874	0.002	0.012	0.029	0.000	0.000	0.000	0.000	4.334	0.000	0.000
2030	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**234,946**	0.06	0.47	1.14	0.00	0.01	0.01	0.01	173.36	0.01	0.00

Peaking Factor:	246.953

Table B1-333. Switchers In-yard Peak Hour Emissions (lbs/hr) 2030

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Switcher In-Yard Peak Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Switchers	WBCT (On-Site)	29.31	0.016	0.116	0.284	0.000	0.002	0.002	0.002	43.252	0.003	0.001
2030	Switchers	UP ICTF Yard	18.83	0.010	0.075	0.183	0.000	0.002	0.002	0.001	27.787	0.002	0.001
2030	Switchers	BNSF Hobart & Commerce Yards	19.82	0.011	0.079	0.192	0.000	0.002	0.002	0.002	29.250	0.002	0.001
2030	Switchers	UP East LA Yard	0.99	0.001	0.004	0.010	0.000	0.000	0.000	0.000	1.462	0.000	0.000
2030	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**40**	0.02	0.16	0.38	0.00	0.00	0.00	0.00	58.50	0.00	0.00

Table B1-334. Switchers In-yard Eight-Hour Peak Emissions (lbs/hr) 2030

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Switcher In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2030	Switchers	WBCT (On-Site)	234.47	0.125	0.932	2.276	0.003	0.019	0.019	0.018	346.016	0.026	0.009
2030	Switchers	UP ICTF Yard	150.63	0.080	0.599	1.462	0.002	0.012	0.012	0.011	222.298	0.017	0.006
2030	Switchers	BNSF Hobart & Commerce Yards	158.56	0.084	0.630	1.539	0.002	0.013	0.013	0.012	233.998	0.017	0.006
2030	Switchers	UP East LA Yard	7.93	0.004	0.032	0.077	0.000	0.001	0.001	0.001	11.700	0.001	0.000
2030	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2030	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**317**	0.17	1.26	3.08	0.00	0.03	0.03	0.02	468.00	0.03	0.01

Year	2036

Table B1-335. On -site Rail Operations 2036 - All Scenarios

Parameters	2036	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.980	1.260
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	16

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

Table B1-336. China Shipping On -site Switching Activity 2036 - All Scenarios

Activity	2036
Annual Throughput WBCT	3,569,909
China Shipping Fraction of Throughput	0.48
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**632**

Table B1-337. Off -site Rail Operations 2036 - All Scenarios

Parameters	2036 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		3.7	7.5	26.3		10.6
East River Bank		0.5	1.1	1.3		
BNSF San Bernardino		19.8	40.2	48.6		
BNSF Cajon		7.5	15.1	17.4		
UP Los Angeles		7.3	14.8	16.6		
UP Alhambra		7.6	15.3	17.7		
UP Yuma		8.4	17.0	19.6		
UP Mojave		0.6	1.2	1.4		
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.3	0.5			
BNSF Hobart & Commerce Yards		0.3	0.6			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	4	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.3	0.6	0.7		na
UP Yuma		0.2	0.5	0.6		na
UP Mojave		0.0	0.0	0.0		na
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	153,068
BNSF Hobart & Commerce Yards	161,125
UP East LA Yard	8,056
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on data collected during development of the 2001 POLA emissions inventory

Table B1-338. China Shipping Line-haul In-yard Activity 2036 - All Scenarios

Parameters	2036 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	8,821
China Shipping Related Off-dock Activity	
UP ICTF Yard	5,930
BNSF Hobart & Commerce Yards	6,242
UP East LA Yard	312
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-339. China Shipping Linehaul Traveling 2036 - All Scenarios

	2036
Fuel Productivity Factor (gross ton-miles/gal)	893

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

Table B1-340. Line-haul Travel within SCAB 2036 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	349,583	8,146
East River Bank	26,075	608
BNSF San Bernardino	947,100	22,071
BNSF Cajon	348,878	8,130
UP Los Angeles	337,492	7,865
UP Alhambra	353,982	8,249
UP Yuma	392,651	9,150
UP Mojave	27,481	640

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-341. Line-haul Travel from SCAB Border to CA Border 2036 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	2,686,923	62,615
UP Yuma	2,046,681	47,695
UP Mojave	180,590	4,208

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-342. China Shipping Switchers In-yard Activity 2036 - All Scenarios

	2036
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	632
China Shipping-Related Off-dock Activity	
UP ICTF Yard	406
BNSF Hobart & Commerce Yards	428
UP East LA Yard	21
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Analysis Year:	2036

Table B1-343. Line-haul Travel Within SCAB Boundaries Peak Day Emissions 2036

Year	Type	Subdivision	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	Alameda Corridor	8,146	1.316	22.989	39.057	0.090	0.702	0.702	0.683	8,872	0.718	0.233
2036	Line-Haul Travel	East River Bank	608	0.098	1.715	2.913	0.007	0.052	0.052	0.051	662	0.054	0.017
2036	Line-Haul Travel	BNSF San Bernardino	22,071	3.565	62.282	105.813	0.243	1.903	1.903	1.850	24,037	1.946	0.633
2036	Line-Haul Travel	BNSF Cajon	8,130	1.313	22.942	38.978	0.090	0.701	0.701	0.682	8,854	0.717	0.233
2036	Line-Haul Travel	UP Los Angeles	7,865	1.270	22.194	37.706	0.087	0.678	0.678	0.659	8,565	0.694	0.225
2036	Line-Haul Travel	UP Alhambra	8,249	1.333	23.278	39.548	0.091	0.711	0.711	0.692	8,984	0.727	0.236
2036	Line-Haul Travel	UP Yuma	9,150	1.478	25.821	43.868	0.101	0.789	0.789	0.767	9,965	0.807	0.262
2036	Line-Haul Travel	UP Mojave	640	0.103	1.807	3.070	0.007	0.055	0.055	0.054	697	0.056	0.018

Table B1-344. Line-haul Travel Between SCAB Boundaries and CA Border Peak Day Emissions 2036

Year	Type	Segment	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	BNSF Cajon	62,615	10.115	176.693	300.192	0.689	5.399	5.399	5.249	68,192	5.522	1.795
2036	Line-Haul Travel	UP Yuma	47,695	7.704	134.590	228.662	0.525	4.113	4.113	3.998	51,943	4.206	1.367
2036	Line-Haul Travel	UP Mojave	4,208	0.680	11.876	20.176	0.046	0.363	0.363	0.353	4,583	0.371	0.121

Table B1-345. Line-haul Travel Total Peak Daily Total Emissions (lbs/day) 2036

Year	Type	Region	Peak Day Work from Locomotives (hp-hr/day)	Peak Daily Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	Within SCAB boundaries	64,859	10	183	311	1	6	6	5	70,637	6	2
2036	Line-Haul Travel	Between SCAB Boundar	114,518	18	323	549	1	10	10	10	124,719	10	3

Peaking Factor:	246.953

Annual Emissions (tons/yr):

Table B1-346. Line-haul Travel Within SCAB Boundaries Annual Emissions 2036

Year	Type	Subdivision	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	Alameda Corridor	2,011,803	0.162	2.839	4.823	0.011	0.087	0.087	0.084	1,095.510	0.089	0.029
2036	Line-Haul Travel	East River Bank	150,058	0.012	0.212	0.360	0.001	0.006	0.006	0.006	81.713	0.007	0.002
2036	Line-Haul Travel	BNSF San Bernardino	5,450,430	0.440	7.690	13.065	0.030	0.235	0.235	0.228	2,967.986	0.240	0.078
2036	Line-Haul Travel	BNSF Cajon	2,007,744	0.162	2.833	4.813	0.011	0.087	0.087	0.084	1,093.300	0.089	0.029
2036	Line-Haul Travel	UP Los Angeles	1,942,222	0.157	2.740	4.656	0.011	0.084	0.084	0.081	1,057.621	0.086	0.028
2036	Line-Haul Travel	UP Alhambra	2,037,115	0.165	2.874	4.883	0.011	0.088	0.088	0.085	1,109.294	0.090	0.029
2036	Line-Haul Travel	UP Yuma	2,259,654	0.183	3.188	5.417	0.012	0.097	0.097	0.095	1,230.476	0.100	0.032
2036	Line-Haul Travel	UP Mojave	158,149	0.013	0.223	0.379	0.001	0.007	0.007	0.007	86.119	0.007	0.002

Table B1-347. Line-haul Travel Between SCAB Boundaries and CA Border Annual Emissions 2036

Year	Type	Segment	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	BNSF Cajon	15,462,868	1.249	21.817	37.067	0.085	0.667	0.667	0.648	8,420.175	0.682	0.222
2036	Line-Haul Travel	UP Yuma	11,778,363	0.951	16.619	28.234	0.065	0.508	0.508	0.494	6,413.809	0.519	0.169
2036	Line-Haul Travel	UP Mojave	1,039,267	0.084	1.466	2.491	0.006	0.045	0.045	0.044	565.924	0.046	0.015

Table B1-348. Line-haul Travel Total Annual Emissions (tons/yr) 2036

Year	Type	Region	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	Within SCAB boundaries	16,017,175	1.294	22.600	38.395	0.088	0.691	0.691	0.671	8,722.019	0.706	0.230
2036	Line-Haul Travel	Between SCAB Boundar	28,280,498	2.284	39.903	67.792	0.156	1.219	1.219	1.185	15,399.909	1.247	0.405

One Hour Peak Emissions (lbs/hr):

Table B1-349. Line-haul Travel Within SCAB Boundaries Peak Hourly Emissions 2036

Year	Type	Subdivision	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	Alameda Corridor	339.44	0.05	0.96	1.63	0.00	0.03	0.03	0.03	369.68	0.03	0.01
2036	Line-Haul Travel	East River Bank	25.32	0.00	0.07	0.12	0.00	0.00	0.00	0.00	27.57	0.00	0.00
2036	Line-Haul Travel	BNSF San Bernardino	919.61	0.15	2.60	4.41	0.01	0.08	0.08	0.08	1,001.53	0.08	0.03
2036	Line-Haul Travel	BNSF Cajon	338.75	0.05	0.96	1.62	0.00	0.03	0.03	0.03	368.93	0.03	0.01
2036	Line-Haul Travel	UP Los Angeles	327.70	0.05	0.92	1.57	0.00	0.03	0.03	0.03	356.89	0.03	0.01
2036	Line-Haul Travel	UP Alhambra	343.71	0.06	0.97	1.65	0.00	0.03	0.03	0.03	374.33	0.03	0.01
2036	Line-Haul Travel	UP Yuma	381.26	0.06	1.08	1.83	0.00	0.03	0.03	0.03	415.22	0.03	0.01
2036	Line-Haul Travel	UP Mojave	26.68	0.00	0.08	0.13	0.00	0.00	0.00	0.00	29.06	0.00	0.00

Table B1-350. Line-haul Travel Between SCAB Boundaries and CA Border Peak Hourly Emissions 2036

Year	Type	Segment	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	BNSF Cajon	2,608.94	0.42	7.36	12.51	0.03	0.22	0.22	0.22	2,841.35	0.23	0.07
2036	Line-Haul Travel	UP Yuma	1,987.28	0.32	5.61	9.53	0.02	0.17	0.17	0.17	2,164.31	0.18	0.06
2036	Line-Haul Travel	UP Mojave	175.35	0.03	0.49	0.84	0.00	0.02	0.02	0.01	190.97	0.02	0.01

Table B1-351. Line-haul Travel Total Peak Hourly Emissions 2036

Year	Type	Region	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	Within SCAB boundaries	2,702	0.437	7.626	12.956	0.030	0.233	0.233	0.227	2,943.207	0.238	0.077
2036	Line-Haul Travel	Between SCAB Boundar	4,772	0.771	13.465	22.876	0.053	0.411	0.411	0.400	5,196.631	0.421	0.137

Eight-Hour Peak Period Emissions (lbs/hr):

Table B1-352. Line-haul Travel Within SCAB Boundaries 8-hr Peak Period Emissions 2036

Year	Type	Subdivision	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	Alameda Corridor	2,715.50	0.44	7.66	13.02	0.03	0.23	0.23	0.23	2,957.40	0.24	0.08
2036	Line-Haul Travel	East River Bank	202.55	0.03	0.57	0.97	0.00	0.02	0.02	0.02	220.59	0.02	0.01
2036	Line-Haul Travel	BNSF San Bernardino	7,356.89	1.19	20.76	35.27	0.08	0.63	0.63	0.62	8,012.27	0.65	0.21
2036	Line-Haul Travel	BNSF Cajon	2,710.02	0.44	7.65	12.99	0.03	0.23	0.23	0.23	2,951.44	0.24	0.08
2036	Line-Haul Travel	UP Los Angeles	2,621.58	0.42	7.40	12.57	0.03	0.23	0.23	0.22	2,855.12	0.23	0.08
2036	Line-Haul Travel	UP Alhambra	2,749.66	0.44	7.76	13.18	0.03	0.24	0.24	0.23	2,994.61	0.24	0.08
2036	Line-Haul Travel	UP Yuma	3,050.04	0.49	8.61	14.62	0.03	0.26	0.26	0.26	3,321.75	0.27	0.09
2036	Line-Haul Travel	UP Mojave	213.47	0.03	0.60	1.02	0.00	0.02	0.02	0.02	232.48	0.02	0.01

Table B1-353. Line-haul Travel Between SCAB Boundaries and CA Border 8-hr Peak Period Emissions 2036

Year	Type	Segment	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	BNSF Cajon	20,871.50	3.37	58.90	100.06	0.23	1.80	1.80	1.75	22,730.81	1.84	0.60
2036	Line-Haul Travel	UP Yuma	15,898.23	2.57	44.86	76.22	0.18	1.37	1.37	1.33	17,314.49	1.40	0.46
2036	Line-Haul Travel	UP Mojave	1,402.78	0.23	3.96	6.73	0.02	0.12	0.12	0.12	1,527.75	0.12	0.04

Table B1-354. Line-haul Travel Total 8-hr Peak Period Emissions 2036

Year	Type	Region	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul Travel	Within SCAB boundaries	21,620	3.492	61.009	103.651	0.238	1.864	1.864	1.812	23,545.653	1.907	0.620
2036	Line-Haul Travel	Between SCAB Boundar	38,173	6.166	107.720	183.010	0.420	3.292	3.292	3.200	41,573.048	3.366	1.094

Analysis Year:	2036

Table B1-355. Line-haul In-yard Peak Daily Emissions (lbs/day) 2036

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Line Haul In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul	WBCT (On-Site)	8,821	1.425	24.892	42.290	0.097	0.761	0.761	0.739	9,606.630	0.778	0.253
2036	Line-Haul	UP ICTF Yard	5,930	0.958	16.734	28.431	0.065	0.511	0.511	0.497	6,458.378	0.523	0.170
2036	Line-Haul	BNSF Hobart & Commerce Yards	6,242	1.008	17.615	29.927	0.069	0.538	0.538	0.523	6,798.292	0.550	0.179
2036	Line-Haul	UP East LA Yard	312	0.050	0.881	1.496	0.003	0.027	0.027	0.026	339.915	0.028	0.009
2036	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**12,484**	2.02	35.23	59.85	0.14	1.08	1.08	1.05	13,596.58	1.10	0.36

Table B1-356. Line-haul In-yard Annual Emissions (tons/yr) 2036

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Line Haul In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul	WBCT (On-Site)	2,178,337	0.176	3.074	5.222	0.012	0.094	0.094	0.091	1,186.195	0.096	0.031
2036	Line-Haul	UP ICTF Yard	1,464,459	0.118	2.066	3.511	0.008	0.063	0.063	0.061	797.459	0.065	0.021
2036	Line-Haul	BNSF Hobart & Commerce Yards	1,541,536	0.125	2.175	3.695	0.008	0.066	0.066	0.065	839.431	0.068	0.022
2036	Line-Haul	UP East LA Yard	77,077	0.006	0.109	0.185	0.000	0.003	0.003	0.003	41.972	0.003	0.001
2036	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**3,083,073**	0.25	4.35	7.39	0.02	0.13	0.13	0.13	1,678.86	0.14	0.04

Peaking Factor:	246.953

Table B1-357. Line-haul In-yard Peak Hour Emissions (lbs/hr) 2036

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Peak Line Haul In-Yard Emissions (lbs/hr) VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul	WBCT (On-Site)	367.54	0.059	1.037	1.762	0.004	0.032	0.032	0.031	400.276	0.032	0.011
2036	Line-Haul	UP ICTF Yard	247.09	0.040	0.697	1.185	0.003	0.021	0.021	0.021	269.099	0.022	0.007
2036	Line-Haul	BNSF Hobart & Commerce Yards	260.09	0.042	0.734	1.247	0.003	0.022	0.022	0.022	283.262	0.023	0.007
2036	Line-Haul	UP East LA Yard	13.00	0.002	0.037	0.062	0.000	0.001	0.001	0.001	14.163	0.001	0.000
2036	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**520**	0.08	1.47	2.49	0.01	0.04	0.04	0.04	566.52	0.05	0.01

Table B1-358. Line-haul In-yard Eight-Hour Peak Emissions (lbs/hr) 2036

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Line Haul In-Yard Emissions (lbs/8-hr period) VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Line-Haul	WBCT (On-Site)	2,940.28	0.475	8.297	14.097	0.032	0.254	0.254	0.246	3,202.210	0.259	0.084
2036	Line-Haul	UP ICTF Yard	1,976.70	0.319	5.578	9.477	0.022	0.170	0.170	0.166	2,152.793	0.174	0.057
2036	Line-Haul	BNSF Hobart & Commerce Yards	2,080.74	0.336	5.872	9.976	0.023	0.179	0.179	0.174	2,266.097	0.183	0.060
2036	Line-Haul	UP East LA Yard	104.04	0.017	0.294	0.499	0.001	0.009	0.009	0.009	113.305	0.009	0.003
2036	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**4,161**	0.67	11.74	19.95	0.05	0.36	0.36	0.35	4,532.19	0.37	0.12

Analysis Year:	2036

Table B1-359. Switchers In-yard Peak Daily Emissions (lbs/day) 2036

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Switcher In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Switchers	WBCT (On-Site)	632	0.336	2.513	6.138	0.008	0.052	0.052	0.048	933.235	0.070	0.023
2036	Switchers	UP ICTF Yard	406	0.216	1.614	3.943	0.005	0.033	0.033	0.031	599.557	0.045	0.015
2036	Switchers	BNSF Hobart & Commerce Yards	428	0.227	1.699	4.151	0.006	0.035	0.035	0.032	631.112	0.047	0.016
2036	Switchers	UP East LA Yard	21	0.011	0.085	0.208	0.000	0.002	0.002	0.002	31.556	0.002	0.001
2036	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**855**	0.45	3.40	8.30	0.01	0.07	0.07	0.06	1,262.22	0.09	0.03

Table B1-360. Switchers In-yard Annual Emissions (tons/yr) 2036

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Switcher In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Switchers	WBCT (On-Site)	156,169	0.041	0.310	0.758	0.001	0.006	0.006	0.006	115.233	0.009	0.003
2036	Switchers	UP ICTF Yard	100,331	0.027	0.199	0.487	0.001	0.004	0.004	0.004	74.031	0.006	0.002
2036	Switchers	BNSF Hobart & Commerce Yards	105,611	0.028	0.210	0.513	0.001	0.004	0.004	0.004	77.928	0.006	0.002
2036	Switchers	UP East LA Yard	5,281	0.001	0.010	0.026	0.000	0.000	0.000	0.000	3.896	0.000	0.000
2036	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**211,223**	0.06	0.42	1.03	0.00	0.01	0.01	0.01	155.86	0.01	0.00

Peaking Factor:	246.953

Table B1-361. Switchers In-yard Peak Hour Emissions (lbs/hr) 2036

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Switcher In-Yard Peak Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Switchers	WBCT (On-Site)	26.35	0.014	0.105	0.256	0.000	0.002	0.002	0.002	38.885	0.003	0.001
2036	Switchers	UP ICTF Yard	16.93	0.009	0.067	0.164	0.000	0.001	0.001	0.001	24.982	0.002	0.001
2036	Switchers	BNSF Hobart & Commerce Yards	17.82	0.009	0.071	0.173	0.000	0.001	0.001	0.001	26.296	0.002	0.001
2036	Switchers	UP East LA Yard	0.89	0.000	0.004	0.009	0.000	0.000	0.000	0.000	1.315	0.000	0.000
2036	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**36**	0.02	0.14	0.35	0.00	0.00	0.00	0.00	52.59	0.00	0.00

Table B1-362. Switchers In-yard Eight-Hour Peak Emissions (lbs/hr) 2036

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Switcher In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2036	Switchers	WBCT (On-Site)	210.79	0.112	0.838	2.046	0.003	0.017	0.017	0.016	311.078	0.023	0.008
2036	Switchers	UP ICTF Yard	135.42	0.072	0.538	1.314	0.002	0.011	0.011	0.010	199.852	0.015	0.005
2036	Switchers	BNSF Hobart & Commerce Yards	142.55	0.076	0.566	1.384	0.002	0.012	0.012	0.011	210.371	0.016	0.005
2036	Switchers	UP East LA Yard	7.13	0.004	0.028	0.069	0.000	0.001	0.001	0.001	10.519	0.001	0.000
2036	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2036	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**285**	0.15	1.13	2.77	0.00	0.02	0.02	0.02	420.74	0.03	0.01

Year	2045

Table B1-363. On -site Rail Operations 2045 - All Scenarios

Parameters	2045	
	Unit Trains	Partial Trains
Train length (ft)	8,813	2,000
On-site Line-Haul Activity		
Average # of train visits per day (peak month)	0.974	1.283
Average hours of operation per visit	1.5	1.5
Number of locomotives per train	4	1
Average HP of locomotive	4,000	4,000
Average Load Factor	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	16

On-site Switchers	WBCT
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.08
Fuel Type (diesel S content in ppm)*	15

Table B1-364. China Shipping On -site Switching Activity 2045 - All Scenarios

Activity	2045
Annual Throughput WBCT	3,569,909
China Shipping Fraction of Throughput	0.48
WBCT Switchers work hours (hp-hrs/day)	1,329
CS Switchers work hours (hp-hrs/day)	**632**

Table B1-365. Off -site Rail Operations 2045 - All Scenarios

Parameters	2045 Train Length (ft) 12,000	10,000	8,000	8,813	6,000	2,000
Line-Hauls Travelling within SCAB						
Peak Month Daily Train-miles in SCAB Region (miles/day)						
Alameda Corridor		3.7	7.5	26.3		10.8
East River Bank		0.5	1.1	1.3		
BNSF San Bernardino		19.8	40.2	48.6		
BNSF Cajon		7.5	15.1	17.4		
UP Los Angeles		7.3	14.8	16.6		
UP Alhambra		7.6	15.3	17.7		
UP Yuma		8.4	17.0	19.6		
UP Mojave		0.6	1.2	1.4		
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Off-dock In-yard Linehaul Activity						
Average # of train visits per day						
UP ICTF Yard		0.3	0.5			
BNSF Hobart & Commerce Yards		0.3	0.6			
UP East LA Yard		0.0	0.0			
UP LATC Yard						
UP COI Yard						
BNSF SB Yard						
BNSF SCIG Yard						
Average hours of operation per visit	1.5	1.5	1.5	1.5	1.5	1.5
Number of locomotives per train	6	5	4	4	3	1
Average HP of locomotive	4,000	4,000	4,000	4,000	4,000	4,000
Average Load Factor	0.28	0.28	0.28	0.28	0.28	0.28
Fuel Type (diesel S content in ppm)*	15	15	15	16	17	18
Line-Hauls Travelling from SCAB border to CA border						
Average # of train visits per day						
BNSF Cajon		0.3	0.6	0.7		na
UP Yuma		0.2	0.5	0.6		na
UP Mojave		0.0	0.0	0.0		na
Locomotives per Train	6	5	4	4	3	1
Gross Train Weight (ton)	12000	10000	8000	8813	6000	2000
Fuel Type (diesel S content in ppm)*	15	15	15		15	
Average travel distance (miles/train)						
BNSF Cajon	191	191	191	191	191	191
UP Yuma	184	184	184	184	184	184
UP Mojave	184	184	184	184	184	184

Off-site Switchers In-yard	
China Shipping-related Annual Throughput in Off-dock RailYard (TEUs)	
UP ICTF Yard	153,068
BNSF Hobart & Commerce Yards	161,124
UP East LA Yard	8,056
UP LATC Yard	0
UP COI Yard	0
BNSF SB Yard	0
BNSF SCIG Yard	0
Average hours of operation per day	8
Average HP of locomotive	2,009
Average Load Factor	0.083
Fuel Type (diesel S content in ppm)*	15

* Based on data collected during development of the 2001 POLA emissions inventory

Table B1-366. Off-site Rail Operations 2045 - All Scenarios

Parameters	2045 Peak Day Work Done by Locomotives (hp-hr/day) *
On-site (In terminal) Activity	8,820
China Shipping Related Off-dock Activity	
UP ICTF Yard	5,930
BNSF Hobart & Commerce Yards	6,242
UP East LA Yard	312
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-367. China Shipping Line -haul Traveling 2045 - All Scenarios

	2045
Fuel Productivity Factor (gross ton-miles/gal)	976

Note: Based on 696 gross ton-miles/gal in year 2011. Assume that the factor will increase by 1% each year.
Source: From ARB, Locomotive Inventory Update: Line Haul Activity (2014).

Fuel Consumption Rate (bhp-hr/gal):	20.80

Source: EPA (2009), Emission Factors for Locomotives.

Table B1-368. Line-haul Travel within SCAB 2045 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives *
Subdivisions	(gross ton-mi/day)	(hp-hr/day)
Alameda Corridor	349,531	7,448
East River Bank	26,075	556
BNSF San Bernardino	947,100	20,180
BNSF Cajon	348,878	7,434
UP Los Angeles	337,492	7,191
UP Alhambra	353,982	7,542
UP Yuma	392,651	8,366
UP Mojave	27,481	586

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-369. Line-haul Travel from SCAB Border to CA Border 2045 - All Scenarios

Parameters	Peak Day Train Travel	Peak Daily Work Done by Line Haul Locomotives*
Segments	(gross ton-mi/day)	(hp-hr/day)
BNSF Cajon	2,686,923	57,251
UP Yuma	2,046,681	43,609
UP Mojave	180,590	3,848

*Work from all linehaul locomotives operating with CS-related TEUs

Table B1-370. China Shipping Switchers In-yard Activity 2045 - All Scenarios

	2045
Activity/Yards	Peak Day Work Done by Switchers (hp-hr/day)*
On-site (In terminal) Activity	632
China Shipping-Related Off-dock Activity	
UP ICTF Yard	406
BNSF Hobart & Commerce Yards	428
UP East LA Yard	21
UP LATC Yard	-
UP COI Yard	-
BNSF SB Yard	-
BNSF SCIG Yard	-

*Work from all switcher locomotives operating on peak day

Analysis Year:	2045

Table B1-371. Line-haul Travel Within SCAB Boundaries Peak Day Emissions 2045

Year	Type	Subdivision	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	Alameda Corridor	7,448	0.758	21.016	20.863	0.082	0.319	0.319	0.319	8,111	0.657	0.213
2045	Line-Haul Travel	East River Bank	556	0.057	1.568	1.556	0.006	0.024	0.024	0.024	605	0.049	0.016
2045	Line-Haul Travel	BNSF San Bernardino	20,180	2.054	56.947	56.532	0.222	0.866	0.866	0.866	21,978	1.780	0.578
2045	Line-Haul Travel	BNSF Cajon	7,434	0.757	20.977	20.824	0.082	0.319	0.319	0.319	8,096	0.656	0.213
2045	Line-Haul Travel	UP Los Angeles	7,191	0.732	20.292	20.145	0.079	0.308	0.308	0.308	7,832	0.634	0.206
2045	Line-Haul Travel	UP Alhambra	7,542	0.768	21.284	21.129	0.083	0.323	0.323	0.323	8,214	0.665	0.216
2045	Line-Haul Travel	UP Yuma	8,366	0.852	23.609	23.437	0.092	0.359	0.359	0.359	9,112	0.738	0.240
2045	Line-Haul Travel	UP Mojave	586	0.060	1.652	1.640	0.006	0.025	0.025	0.025	638	0.052	0.017

Table B1-372. Line-haul Travel Between SCAB Boundaries and CA Border Peak Day Emissions 2045

Year	Type	Segment	Peak Day Work from Locomotives (hp-hr/day)	Peak Day Emissions (lb/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	BNSF Cajon	57,251	5.827	161.557	160.381	0.631	2.455	2.455	2.455	62,351	5.049	1.641
2045	Line-Haul Travel	UP Yuma	43,609	4.439	123.061	122.165	0.480	1.870	1.870	1.870	47,494	3.846	1.250
2045	Line-Haul Travel	UP Mojave	3,848	0.392	10.858	10.779	0.042	0.165	0.165	0.165	4,191	0.339	0.110

Table B1-373. Line-haul Travel Peak Daily Total Emissions (lbs/day) 2045

Year	Type	Region	Peak Day Work from Locomotives (hp-hr/day)	Peak Daily Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	Within SCAB boundaries	59,302	6	167	166	1	3	3	3	64,585	5	2
2045	Line-Haul Travel	Between SCAB Boundari	104,708	11	295	293	1	4	4	4	114,036	9	3

Peaking Factor:	246.953

Annual Emissions (tons/yr):

Table B1-374. Line-haul Travel Within SCAB Boundaries Annual Emissions 2045

Year	Type	Subdivision	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	Alameda Corridor	1,839,197	0.094	2.595	2.576	0.010	0.039	0.039	0.039	1,001.519	0.081	0.026
2045	Line-Haul Travel	East River Bank	137,204	0.007	0.194	0.192	0.001	0.003	0.003	0.003	74.713	0.006	0.002
2045	Line-Haul Travel	BNSF San Bernardino	4,983,544	0.254	7.032	6.980	0.027	0.107	0.107	0.107	2,713.747	0.220	0.071
2045	Line-Haul Travel	BNSF Cajon	1,835,760	0.093	2.590	2.571	0.010	0.039	0.039	0.039	999.648	0.081	0.026
2045	Line-Haul Travel	UP Los Angeles	1,775,851	0.090	2.506	2.487	0.010	0.038	0.038	0.038	967.025	0.078	0.025
2045	Line-Haul Travel	UP Alhambra	1,862,615	0.095	2.628	2.609	0.010	0.040	0.040	0.040	1,014.271	0.082	0.027
2045	Line-Haul Travel	UP Yuma	2,066,091	0.105	2.915	2.894	0.011	0.044	0.044	0.044	1,125.073	0.091	0.030
2045	Line-Haul Travel	UP Mojave	144,602	0.007	0.204	0.203	0.001	0.003	0.003	0.003	78.742	0.006	0.002

Table B1-375. Line-haul Travel Between SCAB Boundaries and CA Border Annual Emissions 2045

Year	Type	Segment	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	BNSF Cajon	14,138,316	0.720	19.949	19.803	0.078	0.303	0.303	0.303	7,698.901	0.623	0.203
2045	Line-Haul Travel	UP Yuma	10,769,427	0.548	15.195	15.085	0.059	0.231	0.231	0.231	5,864.401	0.475	0.154
2045	Line-Haul Travel	UP Mojave	950,244	0.048	1.341	1.331	0.005	0.020	0.020	0.020	517.447	0.042	0.014

Table B1-376. Line-haul Travel Total Annual Emissions (tons/yr) 2045

Year	Type	Region	Annual Work from Locomotives (hp-hr/yr)	Annual Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	Within SCAB boundaries	14,644,864	0.745	20.663	20.513	0.081	0.314	0.314	0.314	7,974.738	0.646	0.210
2045	Line-Haul Travel	Between SCAB Boundari	25,857,986	1.316	36.485	36.219	0.142	0.555	0.555	0.555	14,080.750	1.140	0.371

One Hour Peak Emissions (lbs/hr):

Table B1-377. Line-haul Travel Within SCAB Boundaries Peak Hourly Emissions 2045

Year	Type	Subdivision	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	Alameda Corridor	310.31	0.03	0.88	0.87	0.00	0.01	0.01	0.01	337.96	0.03	0.01
2045	Line-Haul Travel	East River Bank	23.15	0.00	0.07	0.06	0.00	0.00	0.00	0.00	25.21	0.00	0.00
2045	Line-Haul Travel	BNSF San Bernardino	840.84	0.09	2.37	2.36	0.01	0.04	0.04	0.04	915.74	0.07	0.02
2045	Line-Haul Travel	BNSF Cajon	309.73	0.03	0.87	0.87	0.00	0.01	0.01	0.01	337.33	0.03	0.01
2045	Line-Haul Travel	UP Los Angeles	299.63	0.03	0.85	0.84	0.00	0.01	0.01	0.01	326.32	0.03	0.01
2045	Line-Haul Travel	UP Alhambra	314.27	0.03	0.89	0.88	0.00	0.01	0.01	0.01	342.26	0.03	0.01
2045	Line-Haul Travel	UP Yuma	348.60	0.04	0.98	0.98	0.00	0.01	0.01	0.01	379.65	0.03	0.01
2045	Line-Haul Travel	UP Mojave	24.40	0.00	0.07	0.07	0.00	0.00	0.00	0.00	26.57	0.00	0.00

Table B1-378. Line-haul Travel Between SCAB Boundaries and CA Border Peak Hourly Emissions 2045

Year	Type	Segment	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	BNSF Cajon	2,385.46	0.24	6.73	6.68	0.03	0.10	0.10	0.10	2,597.96	0.21	0.07
2045	Line-Haul Travel	UP Yuma	1,817.05	0.18	5.13	5.09	0.02	0.08	0.08	0.08	1,978.92	0.16	0.05
2045	Line-Haul Travel	UP Mojave	160.33	0.02	0.45	0.45	0.00	0.01	0.01	0.01	174.61	0.01	0.00

Table B1-379. Line-haul Travel Total Peak Hourly Emissions 2045

Year	Type	Region	1-hr Peak Work (hp-hr/day)	Peak Hourly Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	Within SCAB boundaries	2,471	0.251	6.973	6.922	0.027	0.106	0.106	0.106	2,691.040	0.218	0.071
2045	Line-Haul Travel	Between SCAB Boundari	4,363	0.444	12.312	12.222	0.048	0.187	0.187	0.187	4,751.487	0.385	0.125

Eight-Hour Peak Period Emissions (lbs/hr):

Table B1-380. Line-haul Travel Within SCAB Boundaries 8-hr Peak Period Emissions 2045

Year	Type	Subdivision	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	Alameda Corridor	2,482.51	0.25	7.01	6.95	0.03	0.11	0.11	0.11	2,703.67	0.22	0.07
2045	Line-Haul Travel	East River Bank	185.20	0.02	0.52	0.52	0.00	0.01	0.01	0.01	201.69	0.02	0.01
2045	Line-Haul Travel	BNSF San Bernardino	6,726.70	0.68	18.98	18.84	0.07	0.29	0.29	0.29	7,325.94	0.59	0.19
2045	Line-Haul Travel	BNSF Cajon	2,477.88	0.25	6.99	6.94	0.03	0.11	0.11	0.11	2,698.61	0.22	0.07
2045	Line-Haul Travel	UP Los Angeles	2,397.01	0.24	6.76	6.71	0.03	0.10	0.10	0.10	2,610.55	0.21	0.07
2045	Line-Haul Travel	UP Alhambra	2,514.12	0.26	7.09	7.04	0.03	0.11	0.11	0.11	2,738.09	0.22	0.07
2045	Line-Haul Travel	UP Yuma	2,788.77	0.28	7.87	7.81	0.03	0.12	0.12	0.12	3,037.21	0.25	0.08
2045	Line-Haul Travel	UP Mojave	195.18	0.02	0.55	0.55	0.00	0.01	0.01	0.01	212.57	0.02	0.01

Table B1-381. Line-haul Travel Between SCAB Boundaries and CA Border 8-hr Peak Period Emissions 2045

Year	Type	Segment	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	BNSF Cajon	19,083.65	1.94	53.85	53.46	0.21	0.82	0.82	0.82	20,783.68	1.68	0.55
2045	Line-Haul Travel	UP Yuma	14,536.38	1.48	41.02	40.72	0.16	0.62	0.62	0.62	15,831.33	1.28	0.42
2045	Line-Haul Travel	UP Mojave	1,282.62	0.13	3.62	3.59	0.01	0.06	0.06	0.06	1,396.88	0.11	0.04

Table B1-382. Line-haul Travel Total 8-hr Peak Period Emissions 2045

Year	Type	Region	8-hr Peak Hour Work (hp-hr/day)	8-hr Peak Period Emissions (lbs/8hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul Travel	Within SCAB boundaries	19,767	2.012	55.782	55.376	0.218	0.848	0.848	0.848	21,528.321	1.743	0.567
2045	Line-Haul Travel	Between SCAB Boundari	34,903	3.552	98.492	97.775	0.384	1.497	1.497	1.497	38,011.894	3.078	1.000

Analysis Year:	2045

Table B1-383. Line-haul In-yard Peak Daily Emissions (lbs/day) 2045

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Line Haul In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul	WBCT (On-Site)	8,820	0.898	24.888	24.707	0.097	0.378	0.378	0.378	9,605.277	0.778	0.253
2045	Line-Haul	UP ICTF Yard	5,930	0.604	16.734	16.612	0.065	0.254	0.254	0.254	6,458.373	0.523	0.170
2045	Line-Haul	BNSF Hobart & Commerce Yards	6,242	0.635	17.615	17.487	0.069	0.268	0.268	0.268	6,798.288	0.550	0.179
2045	Line-Haul	UP East LA Yard	312	0.032	0.881	0.874	0.003	0.013	0.013	0.013	339.914	0.028	0.009
2045	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**12,484**	1.27	35.23	34.97	0.14	0.54	0.54	0.54	13,596.58	1.10	0.36

Table B1-384. Line-haul In-yard Annual Emissions (tons/yr) 2045

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Line Haul In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul	WBCT (On-Site)	2,178,030	0.111	3.073	3.051	0.012	0.047	0.047	0.047	1,186.028	0.096	0.031
2045	Line-Haul	UP ICTF Yard	1,464,459	0.075	2.066	2.051	0.008	0.031	0.031	0.031	797.459	0.065	0.021
2045	Line-Haul	BNSF Hobart & Commerce Yards	1,541,535	0.078	2.175	2.159	0.008	0.033	0.033	0.033	839.430	0.068	0.022
2045	Line-Haul	UP East LA Yard	77,077	0.004	0.109	0.108	0.000	0.002	0.002	0.002	41.972	0.003	0.001
2045	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**3,083,071**	0.16	4.35	4.32	0.02	0.07	0.07	0.07	1,678.86	0.14	0.04

Peaking Factor:	246.953

Table B1-385. Line-haul In-yard Peak Hour Emissions (lbs/hr) 2045

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Peak Line Haul In-Yard Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul	WBCT (On-Site)	367.48	0.037	1.037	1.029	0.004	0.016	0.016	0.016	400.220	0.032	0.011
2045	Line-Haul	UP ICTF Yard	247.09	0.025	0.697	0.692	0.003	0.011	0.011	0.011	269.099	0.022	0.007
2045	Line-Haul	BNSF Hobart & Commerce Yards	260.09	0.026	0.734	0.729	0.003	0.011	0.011	0.011	283.262	0.023	0.007
2045	Line-Haul	UP East LA Yard	13.00	0.001	0.037	0.036	0.000	0.001	0.001	0.001	14.163	0.001	0.000
2045	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**520**	0.05	1.47	1.46	0.01	0.02	0.02	0.02	566.52	0.05	0.01

Table B1-386. Line-haul In-yard Eight-Hour Peak Emissions (lbs/hr) 2045

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Line Haul In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Line-Haul	WBCT (On-Site)	2,939.87	0.299	8.296	8.236	0.032	0.126	0.126	0.126	3,201.759	0.259	0.084
2045	Line-Haul	UP ICTF Yard	1,976.70	0.201	5.578	5.537	0.022	0.085	0.085	0.085	2,152.791	0.174	0.057
2045	Line-Haul	BNSF Hobart & Commerce Yards	2,080.74	0.212	5.872	5.829	0.023	0.089	0.089	0.089	2,266.096	0.183	0.060
2045	Line-Haul	UP East LA Yard	104.04	0.011	0.294	0.291	0.001	0.004	0.004	0.004	113.305	0.009	0.003
2045	Line-Haul	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Line-Haul	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**4,161**	0.42	11.74	11.66	0.05	0.18	0.18	0.18	4,532.19	0.37	0.12

Analysis Year:	2045

Table B1-387. Switchers In-yard Peak Daily Emissions (lbs/day) 2045

Year	Type	Rail Yard	Peak Day Work hp-hrs/day	Peak Daily Switcher In-Yard Emissions (lbs/day)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Switchers	WBCT (On-Site)	632	0.336	2.513	6.138	0.008	0.052	0.052	0.048	933.235	0.070	0.023
2045	Switchers	UP ICTF Yard	406	0.216	1.614	3.943	0.005	0.033	0.033	0.031	599.556	0.045	0.015
2045	Switchers	BNSF Hobart & Commerce Yards	428	0.227	1.699	4.151	0.006	0.035	0.035	0.032	631.112	0.047	0.016
2045	Switchers	UP East LA Yard	21	0.011	0.085	0.208	0.000	0.002	0.002	0.002	31.556	0.002	0.001
2045	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Total Off-dock Railyards	**855**	0.45	3.40	8.30	0.01	0.07	0.07	0.06	1,262.22	0.09	0.03

Table B1-388. Switchers In-yard Annual Emissions (tons/yr) 2045

Year	Type	Rail Yard	Annual Work (hp-hr/yr)	Annual Switcher In-Yard Emissions (tons/yr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Switchers	WBCT (On-Site)	156,169	0.041	0.310	0.758	0.001	0.006	0.006	0.006	115.233	0.009	0.003
2045	Switchers	UP ICTF Yard	100,331	0.027	0.199	0.487	0.001	0.004	0.004	0.004	74.031	0.006	0.002
2045	Switchers	BNSF Hobart & Commerce Yards	105,611	0.028	0.210	0.513	0.001	0.004	0.004	0.004	77.928	0.006	0.002
2045	Switchers	UP East LA Yard	5,281	0.001	0.010	0.026	0.000	0.000	0.000	0.000	3.896	0.000	0.000
2045	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Total Off-dock Railyards	**211,223**	0.06	0.42	1.03	0.00	0.01	0.01	0.01	155.86	0.01	0.00

Peaking Factor:	246.953

Table B1-389. Switchers In-yard Peak Hour Emissions (lbs/hr) 2045

Year	Type	Rail Yard	Peak Hour Work hp-hrs	1-hr Switcher In-Yard Peak Emissions (lbs/hr)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Switchers	WBCT (On-Site)	26.35	0.014	0.105	0.256	0.000	0.002	0.002	0.002	38.885	0.003	0.001
2045	Switchers	UP ICTF Yard	16.93	0.009	0.067	0.164	0.000	0.001	0.001	0.001	24.982	0.002	0.001
2045	Switchers	BNSF Hobart & Commerce Yards	17.82	0.009	0.071	0.173	0.000	0.001	0.001	0.001	26.296	0.002	0.001
2045	Switchers	UP East LA Yard	0.89	0.000	0.004	0.009	0.000	0.000	0.000	0.000	1.315	0.000	0.000
2045	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**36**	0.02	0.14	0.35	0.00	0.00	0.00	0.00	52.59	0.00	0.00

Table B1-390. Switchers In-yard Eight-Hour Peak Emissions (lbs/hr) 2045

Year	Type	Rail Yard	Peak 8hr Period hp-hrs	8-hr Peak Switcher In-Yard Emissions (lbs/8-hr period)									
				VOC	CO	NOx	SOx	DPM	PM10	PM2.5	CO2	CH4	N2O
2045	Switchers	WBCT (On-Site)	210.79	0.112	0.838	2.046	0.003	0.017	0.017	0.016	311.078	0.023	0.008
2045	Switchers	UP ICTF Yard	135.42	0.072	0.538	1.314	0.002	0.011	0.011	0.010	199.852	0.015	0.005
2045	Switchers	BNSF Hobart & Commerce Yards	142.55	0.076	0.566	1.384	0.002	0.012	0.012	0.011	210.371	0.016	0.005
2045	Switchers	UP East LA Yard	7.13	0.004	0.028	0.069	0.000	0.001	0.001	0.001	10.519	0.001	0.000
2045	Switchers	UP LATC Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	UP COI Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	BNSF SB Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2045	Switchers	BNSF SCIG Yard	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Off-dock Railyards			**285**	0.15	1.13	2.77	0.00	0.02	0.02	0.02	420.74	0.03	0.01

Drayage Trucks

China Shipping Operations Data Needs	Analysis Year	2008

Table B1-391. On-site Truck Activities in 2008 - Proposed Mitigated

Parameter	Values
Annual number visits	159,384
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	9
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	2

Table B1-392. Port Trucks Age Distribution for Calendar Year Fleet 2008 - Proposed Mitigated

	Calendar Year
Scenario: Actuals	**2008**
% Trips by LNG Trucks	0.0%
Model Year	**(%)**
2013	0.0000
2012	0.0000
2011	0.0000
2010	0.0000
2009	0.0061
2008	0.0041
2007	0.0048
2006	0.0031
2005	0.0117
2004	0.0088
2003	0.0117
2002	0.0230
2001	0.0467
2000	0.0943
1999	0.1029
1998	0.1044
1997	0.0960
1996	0.0999
1995	0.0967
1994	0.0791
1993	0.0573
1992	0.0335
1991	0.0301
1990	0.0240
1989	0.0206
1988	0.0111
1987-	0.0303
TOTAL	1.0000

2008 Baseline On-terminal Truck Emissions

Diesel from LNG trucks' mixed fuel

Table B1-393. Emission Factors 2008 Proposed Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	Heavy Duty Trucks	Diesel	15	6.99	7.96	14.53	28.98	3046	1.84	1.76	0.04	0.06	0.01	0.03	1.94	1.80	1.84	0.02	0.47	0.30	3146.57
2008	Heavy Duty Trucks	LNG	15	6.99	7.96	14.53	28.98	3046	1.84	1.76	0.04	0.06	0.01	0.03	1.94	1.80	0.0277	0.02	0.47	0.30	3146.57
				Idling Emission Factors (g/hr)																	
2008	Heavy Duty Trucks	Diesel	idling	11.55	13.15	48.34	109.52	6714.60	1.74	1.67	0.00	0.00	0.00	0.00	1.74	1.67	1.74	0.06	0.54	0.00	6728.97
2008	Heavy Duty Trucks	LNG	idling	11.55	13.15	48.34	109.52	6714.60	1.74	1.67	0.00	0.00	0.00	0.00	1.74	1.67	0.0261	0.06	0.54	0.00	6728.97

Table B1-394. Annual Running Emissions 2008 Proposed Mitigated

					Annual Emissions (tons/year)																
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	HDT	Diesel	1.5	159,384	1.84	2.10	3.83	7.64	803	0.49	0.46	0.01	0.02	0.00	0.01	0.51	0.47	0.49	0.00	0.12	0.08	829.24
2008	HDT	LNG	1.5	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table B1-395. Peak Day Running Emissions 2008 Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	HDT	Diesel	0.00427	15.74	17.92	32.70	65.23	6,855	4.15	3.97	0.08	0.14	0.02	0.06	4.37	4.05	4.15	0.04	1.06	0.67	7081.74
2008	HDT	LNG	0.00427	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table B1-396. Annual Idling Emissions 2008 Proposed Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	Heavy Duty Trucks	Diesel	In-Gate	159,384	10	0.34	0.39	1.42	3.21	197	0.051	0.049	0.000	0.000	0.000	0.000	0.051	0.049	0.051	0.002	0.016	0.000	197.04
2008	Heavy Duty Trucks	Diesel	Out-Gate	159,384	6	0.20	0.23	0.85	1.92	118	0.031	0.029	0.000	0.000	0.000	0.000	0.031	0.029	0.031	0.001	0.009	0.000	118.22
2008	Heavy Duty Trucks	Diesel	On-terminal	159,384	9	0.30	0.35	1.27	2.89	177	0.046	0.044	0.000	0.000	0.000	0.000	0.046	0.044	0.046	0.002	0.014	0.000	177.33
2008	Heavy Duty Trucks	LNG	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Heavy Duty Trucks	LNG	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Heavy Duty Trucks	LNG	On-terminal	0	9	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

Table B1-397. Peak Day Idling 2008 Proposed Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	Heavy Duty Trucks	Diesel	In-Gate	681	10	2.89	3.29	12.09	27.39	1679	0.435	0.416	0.000	0.000	0.000	0.000	0.435	0.416	0.435	0.016	0.134	0.001	1682.68
2008	Heavy Duty Trucks	Diesel	Out-Gate	681	6	1.73	1.97	7.25	16.43	1007	0.261	0.250	0.000	0.000	0.000	0.000	0.261	0.250	0.261	0.010	0.081	0.000	1009.61
2008	Heavy Duty Trucks	Diesel	On-terminal	681	9	2.60	2.96	10.88	24.65	1511	0.392	0.375	0.000	0.000	0.000	0.000	0.392	0.375	0.392	0.014	0.121	0.001	1514.41
2008	Heavy Duty Trucks	LNG	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Heavy Duty Trucks	LNG	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Heavy Duty Trucks	LNG	On-terminal	0	9	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

China Shipping Operations Data Needs	Analysis Year	2008

Table B1-398. On-site truck activities in 2008 - FEIR Mitigated Baseline

Parameter	Values
Annual number visits	159,384
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	9
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	2

Table B1-399. Port Trucks Age Distribution for Calendar Year Fleet 2008 - FEIR Mitigated Baseline

	Calendar Year
Scenario: Mitigated Baseline	**2008**
% Trips by LNG Trucks	0.0%
Model Year	**(%)**
2013	0.0000
2012	0.0000
2011	0.0000
2010	0.0000
2009	0.0061
2008	0.0041
2007	0.0048
2006	0.0031
2005	0.0117
2004	0.0088
2003	0.0117
2002	0.0230
2001	0.0467
2000	0.0943
1999	0.1029
1998	0.1044
1997	0.0960
1996	0.0999
1995	0.0967
1994	0.0791
1993	0.0573
1992	0.0335
1991	0.0301
1990	0.0240
1989	0.0206
1988	0.0111
1987-	0.0303
TOTAL	1.0000

Baseline On-terminal Truck Emissions

Diesel from LNG trucks' mixed fuel

Table B1-400. Emission Factors 2008 FEIR Mitigated Baseline

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	Heavy Duty Trucks	Diesel	15	6.99	7.96	14.53	28.98	3046	1.84	1.76	0.04	0.06	0.01	0.03	1.94	1.80	1.84	0.02	0.47	0.30	3146.57
2008	Heavy Duty Trucks	LNG	15	6.99	7.96	14.53	28.98	3046	1.84	1.76	0.04	0.06	0.01	0.03	1.94	1.80	0.0277	0.02	0.47	0.30	3146.57
				Idling Emission Factors (g/hr)																	
2008	Heavy Duty Trucks	Diesel	idling	11.55	13.15	48.34	109.52	6714.60	1.74	1.67	0.00	0.00	0.00	0.00	1.74	1.67	1.74	0.06	0.54	0.00	6728.97
2008	Heavy Duty Trucks	LNG	idling	11.55	13.15	48.34	109.52	6714.60	1.74	1.67	0.00	0.00	0.00	0.00	1.74	1.67	0.0261	0.06	0.54	0.00	6728.97

Table B1-401. Annual Running Emissions 2008 FEIR Mitigated Baseline

					Annual Emissions (tons/year)																
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	HDT	Diesel	1.5	159,384	1.84	2.10	3.83	7.64	803	0.49	0.46	0.01	0.02	0.00	0.01	0.51	0.47	0.49	0.00	0.12	0.08	829.24
2008	HDT	LNG	1.5	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table B1-402. Peak Day Running Emissions 2008 FEIR Mitigated Baseline

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	HDT	Diesel	0.00427	15.74	17.92	32.70	65.23	6,855	4.15	3.97	0.08	0.14	0.02	0.06	4.37	4.05	4.15	0.04	1.06	0.67	7081.74
2008	HDT	LNG	0.00427	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table B1-403. Annual Idling Emissions 2008 FEIR Mitigated Baseline

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	Heavy Duty Trucks	Diesel	In-Gate	159,384	10	0.34	0.39	1.42	3.21	197	0.051	0.049	0.000	0.000	0.000	0.000	0.051	0.049	0.051	0.002	0.016	0.000	197.04
2008	Heavy Duty Trucks	Diesel	Out-Gate	159,384	6	0.20	0.23	0.85	1.92	118	0.031	0.029	0.000	0.000	0.000	0.000	0.031	0.029	0.031	0.001	0.009	0.000	118.22
2008	Heavy Duty Trucks	Diesel	On-terminal	159,384	9	0.30	0.35	1.27	2.89	177	0.046	0.044	0.000	0.000	0.000	0.000	0.046	0.044	0.046	0.002	0.014	0.000	177.33
2008	Heavy Duty Trucks	LNG	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Heavy Duty Trucks	LNG	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Heavy Duty Trucks	LNG	On-terminal	0	9	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

Table B1-404. Peak Day Idling 2008 FEIR Mitigated Baseline

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	Heavy Duty Trucks	Diesel	In-Gate	681	10	2.89	3.29	12.09	27.39	1679	0.435	0.416	0.000	0.000	0.000	0.000	0.435	0.416	0.435	0.016	0.134	0.001	1682.68
2008	Heavy Duty Trucks	Diesel	Out-Gate	681	6	1.73	1.97	7.25	16.43	1007	0.261	0.250	0.000	0.000	0.000	0.000	0.261	0.250	0.261	0.010	0.081	0.000	1009.61
2008	Heavy Duty Trucks	Diesel	On-terminal	681	9	2.60	2.96	10.88	24.65	1511	0.392	0.375	0.000	0.000	0.000	0.000	0.392	0.375	0.392	0.014	0.121	0.001	1514.41
2008	Heavy Duty Trucks	LNG	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Heavy Duty Trucks	LNG	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Heavy Duty Trucks	LNG	On-terminal	0	9	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

China Shipping Operations Data Needs

Analysis Year	2012

Table B1-405. On-site truck activities in 2012 - Proposed Mitigated

Parameter	Values
Annual number visits	245,650
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	17
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	2

Table B1-406. Port Trucks Age Distribution for Calendar Year Fleet 2012 - Proposed Mitigated

	Calendar Year
Scenario: Proposed Mitigated	**2012**
% Trips by LNG Trucks	10.0%
Model Year	**(%)**
2013	0.0034
2012	0.0131
2011	0.0668
2010	0.0982
2009	0.3833
2008	0.2418
2007	0.1864
2006	0.0002
2005	0.0005
2004	0.0004
2003	0.0003
2002	0.0003
2001	0.0003
2000	0.0017
1999	0.0006
1998	0.0004
1997	0.0005
1996	0.0001
1995	0.0006
1994	0.0000
1993	0.0004
1992	0.0002
1991	0.0001
1990	0.0003
1989	0.0000
1988	0.0000
1987-	0.0001
TOTAL	1.0000

2012 On-terminal Truck Emissions

Diesel from LNG trucks' mixed fuel

Table B1-407. Emission Factors 2012 Proposed Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	Heavy Duty Trucks	Diesel	15	1.23	1.40	2.96	12.50	2817	0.13	0.13	0.04	0.06	0.01	0.03	0.23	0.16	0.13	0.02	0.08	0.30	2907.52
2012	Heavy Duty Trucks	LNG	15	1.23	1.40	2.96	12.50	2817	0.13	0.13	0.04	0.06	0.01	0.03	0.23	0.16	0.0020	0.02	0.08	0.30	2907.52
				Idling Emission Factors (g/hr)																	
2012	Heavy Duty Trucks	Diesel	idling	3.08	3.51	16.18	70.73	7386.32	0.17	0.16	0.00	0.00	0.00	0.00	0.17	0.16	0.17	0.07	0.14	0.00	7390.86
2012	Heavy Duty Trucks	LNG	idling	3.08	3.51	16.18	70.73	7386.32	0.17	0.16	0.00	0.00	0.00	0.00	0.17	0.16	0.0026	0.07	0.14	0.00	7390.86

Table B1-408. Annual Running Emissions 2012 Proposed Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	HDT	Diesel	1.5	221,085	0.45	0.51	1.08	4.57	1030	0.05	0.05	0.01	0.02	0.00	0.01	0.08	0.06	0.05	0.01	0.03	0.11	1062.86
2012	HDT	LNG	1.5	24,565	0.05	0.06	0.12	0.51	114	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	118.10

Table B1-409. Peak Day Running Emissions 2012 Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	HDT	Diesel	0.00399	3.59	4.08	8.63	36.51	8,224	0.39	0.37	0.10	0.18	0.03	0.08	0.67	0.47	0.39	0.05	0.24	0.87	8488.77
2012	HDT	LNG	0.00399	0.40	0.45	0.96	4.06	914	0.04	0.04	0.01	0.02	0.00	0.01	0.07	0.05	0.00	0.01	0.03	0.10	943.20

Table B1-410. Annual Idling Emissions 2012 Proposed Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	Heavy Duty Trucks	Diesel	In-Gate	221,085	10	0.13	0.14	0.66	2.87	300	0.007	0.007	0.000	0.000	0.000	0.000	0.007	0.007	0.007	0.003	0.006	0.000	300.20
2012	Heavy Duty Trucks	Diesel	Out-Gate	221,085	6	0.08	0.09	0.39	1.72	180	0.004	0.004	0.000	0.000	0.000	0.000	0.004	0.004	0.004	0.002	0.003	0.000	180.12
2012	Heavy Duty Trucks	Diesel	On-terminal	221,085	17	0.21	0.24	1.12	4.88	510	0.012	0.011	0.000	0.000	0.000	0.000	0.012	0.011	0.012	0.005	0.010	0.000	510.33
2012	Heavy Duty Trucks	LNG	In-Gate	24,565	10	0.01	0.02	0.07	0.32	33	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.001	0.000	33.36
2012	Heavy Duty Trucks	LNG	Out-Gate	24,565	6	0.01	0.01	0.04	0.19	20	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	20.01
2012	Heavy Duty Trucks	LNG	On-terminal	24,565	17	0.02	0.03	0.12	0.54	57	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.001	0.001	0.000	56.70

Table B1-411. Peak Day Idling 2012 Proposed Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	Heavy Duty Trucks	Diesel	In-Gate	883	10	1.00	1.14	5.25	22.94	2396	0.056	0.053	0.000	0.000	0.000	0.000	0.056	0.053	0.056	0.023	0.046	0.001	2397.54
2012	Heavy Duty Trucks	Diesel	Out-Gate	883	6	0.60	0.68	3.15	13.77	1438	0.034	0.032	0.000	0.000	0.000	0.000	0.034	0.032	0.034	0.014	0.028	0.001	1438.53
2012	Heavy Duty Trucks	Diesel	On-terminal	883	17	1.70	1.94	8.92	39.00	4073	0.095	0.091	0.000	0.000	0.000	0.000	0.095	0.091	0.095	0.039	0.079	0.002	4075.82
2012	Heavy Duty Trucks	LNG	In-Gate	98	10	0.11	0.13	0.58	2.55	266	0.006	0.006	0.000	0.000	0.000	0.000	0.006	0.006	0.000	0.003	0.005	0.000	266.39
2012	Heavy Duty Trucks	LNG	Out-Gate	98	6	0.07	0.08	0.35	1.53	160	0.004	0.004	0.000	0.000	0.000	0.000	0.004	0.004	0.000	0.002	0.003	0.000	159.84
2012	Heavy Duty Trucks	LNG	On-terminal	98	17	0.19	0.22	0.99	4.33	453	0.011	0.010	0.000	0.000	0.000	0.000	0.011	0.010	0.000	0.004	0.009	0.000	452.87

China Shipping Operations Data Needs

Analysis Year	2014

Table B1-412. On-site Truck Activities 2014 - Proposed Mitigated

Parameter	Values
Annual number of two-way trips	554,937
Average Idling Time (min / truck trip)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/trip)	1.5

Table B1-413. Port Trucks Age Distribution for Calendar Year Fleet 2014 - Proposed Mitigated

2014: baseline actual data

	Calendar Year
	2014
% Trips by LNG Trucks	8.2%
Model Year	(%)
2015	0.0100
2014	0.0203
2013	0.0383
2012	0.0307
2011	0.0854
2010	0.1772
2009	0.3448
2008	0.2822
2007	0.0081
2006	0.0007
2005	0.0003
2004	0.0001
2003	0.0001
2002	0.0000
2001	0.0001
2000	0.0006
1999	0.0001
1998	0.0004
1997	0.0001
1996	0.0002
1995	0.0000
1994	0.0001
1993	0.0000
1992	0.0000
1991	0.0000
1990	0.0000
1989-	0.0000
TOTAL	1.0000

2014 On-terminal Truck Emissions

95% reduction for LNG trucks

Table B1-414. Emission Factors 2014 - Proposed Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	Heavy Duty Trucks	Diesel	15	0.96	1.09	2.68	11.15	2768	0.06	0.06	0.04	0.06	0.01	0.03	0.16	0.09	0.06	0.02	0.06	0.29	2856.88
2014	Heavy Duty Trucks	LNG	15	0.96	1.09	2.68	11.15	2768	0.06	0.06	0.04	0.06	0.01	0.03	0.16	0.09	0.0030	0.02	0.06	0.29	2856.88
				Idling Emission Factors (g/hr)																	
2014	Heavy Duty Trucks	Diesel	idling	2.38	2.70	14.57	56.52	7360	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.07	0.11	0.00	7363.88
2014	Heavy Duty Trucks	LNG	idling	2.38	2.70	14.57	56.52	7360	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.0009	0.07	0.11	0.00	7363.88

Table B1-415. Annual Running Emissions 2014 - Proposed Mitigated

					Annual Emissions (tons/year)																
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	HDT	Diesel	1.5	509,432	0.81	0.92	2.26	9.39	2331	0.05	0.05	0.03	0.05	0.01	0.02	0.13	0.08	0.05	0.01	0.05	0.25	2406.44
2014	HDT	LNG	1.5	45,505	0.07	0.08	0.20	0.84	208	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02	214.95

Table B1-416. Peak Day Running Emissions 2014 - Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	HDT	Diesel	0.00416	6.70	7.63	18.80	78.10	19,387	0.42	0.40	0.25	0.43	0.06	0.18	1.10	0.65	0.42	0.12	0.45	2.06	20011.89
2014	HDT	LNG	0.00416	0.60	0.68	1.68	6.98	1732	0.04	0.04	0.02	0.04	0.01	0.02	0.10	0.06	0.00	0.01	0.04	0.18	1787.55

Table B1-417. Annual Idling Emissions 2014 - Proposed Mitigation

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	Heavy Duty Trucks	Diesel	In-Gate	509,432	10	0.22	0.25	1.36	5.29	689	0.002	0.002	0.000	0.000	0.000	0.000	0.002	0.002	0.002	0.007	0.010	0.000	689.20
2014	Heavy Duty Trucks	Diesel	Out-Gate	509,432	6	0.13	0.15	0.82	3.17	413	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.004	0.006	0.000	413.52
2014	Heavy Duty Trucks	Diesel	On-terminal	509,432	24	0.53	0.61	3.27	12.69	1653	0.004	0.004	0.000	0.000	0.000	0.000	0.004	0.004	0.004	0.016	0.025	0.001	1654.08
2014	Heavy Duty Trucks	LNG	In-Gate	45,505	10	0.02	0.02	0.12	0.47	62	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	61.56
2014	Heavy Duty Trucks	LNG	Out-Gate	45,505	6	0.01	0.01	0.07	0.28	37	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	36.94
2014	Heavy Duty Trucks	LNG	On-terminal	45,505	24	0.05	0.05	0.29	1.13	148	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.000	147.75

Table B1-418. Peak Day Idling 2014 - Proposed Mitigation

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	Heavy Duty Trucks	Diesel	In-Gate	2,118	10	1.85	2.10	11.34	43.99	5728	0.015	0.014	0.000	0.000	0.000	0.000	0.015	0.014	0.015	0.055	0.086	0.003	5731.29
2014	Heavy Duty Trucks	Diesel	Out-Gate	2,118	6	1.11	1.26	6.80	26.39	3437	0.009	0.008	0.000	0.000	0.000	0.000	0.009	0.008	0.009	0.033	0.052	0.002	3438.77
2014	Heavy Duty Trucks	Diesel	On-terminal	2,118	24	4.44	5.05	27.21	105.57	13748	0.035	0.034	0.000	0.000	0.000	0.000	0.035	0.034	0.035	0.131	0.206	0.006	13755.10
2014	Heavy Duty Trucks	LNG	In-Gate	189	10	0.17	0.19	1.01	3.93	512	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.005	0.008	0.000	511.95
2014	Heavy Duty Trucks	LNG	Out-Gate	189	6	0.10	0.11	0.61	2.36	307	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.003	0.005	0.000	307.17
2014	Heavy Duty Trucks	LNG	On-terminal	189	24	0.40	0.45	2.43	9.43	1228	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.012	0.018	0.001	1228.67

China Shipping Operations Data Needs

Analysis Year	2018

Table B1-419. On-site truck activities in 2018 - Proposed Mitigated

Parameter	Values
Annual number visits	525,346
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	1.5

Table B1-420. Port Trucks Age Distribution for Calendar Year Fleet 2018 - Proposed Mitigated

	Calendar Year
Scenario: Proposed Mitigated	**2018**
% Trips by LNG Trucks	8.2%
Model Year	**(%)**
2019	0.0002
2018	0.0009
2017	0.0021
2016	0.0132
2015	0.0279
2014	0.0219
2013	0.0361
2012	0.0534
2011	0.1016
2010	0.1644
2009	0.2604
2008	0.2271
2007	0.0908
TOTAL	1.0000

2018 On-terminal Truck Emissions

Diesel from LNG trucks' mixed fuel

Table B1-421. Emission Factors 2018 Proposed Mitigated

				Running Emission Factors (g/mile)																
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	Heavy Duty Trucks	Diesel	15	1.12	1.27	3.05	12.30	2772	0.09	0.09	0.04	0.06	0.01	0.03	0.19	0.12	0.09	0.02	0.08	0.29	2861.33
2018	Heavy Duty Trucks	LNG	15	1.12	1.27	3.05	12.30	2772	0.09	0.09	0.04	0.06	0.01	0.03	0.19	0.12	0.0045	0.02	0.08	0.29	2861.33
				Idling Emission Factors (g/hr)																	
2018	Heavy Duty Trucks	Diesel	idling	2.38	2.71	16.33	56.44	7263.18	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.07	0.11	0.00	7266.92
2018	Heavy Duty Trucks	LNG	idling	2.38	2.71	16.33	56.44	7263.18	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.0010	0.07	0.11	0.00	7266.92

Table B1-422. Annual Running Emissions 2018 Proposed Mitigated

					Annual Emissions (tons/year)																
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	HDT	Diesel	1.5	482,268	0.89	1.01	2.43	9.81	2211	0.07	0.07	0.03	0.05	0.01	0.02	0.15	0.10	0.07	0.01	0.06	0.23	2281.66
2018	HDT	LNG	1.5	43,078	0.08	0.09	0.22	0.88	197	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.02	203.81

Table B1-423. Peak Day Running Emissions 2018 Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	HDT	Diesel	0.00423	7.54	8.58	20.53	82.94	18,689	0.60	0.58	0.24	0.41	0.06	0.18	1.25	0.81	0.60	0.11	0.51	1.97	19287.80
2018	HDT	LNG	0.00423	0.67	0.77	1.83	7.41	1669	0.05	0.05	0.02	0.04	0.01	0.02	0.11	0.07	0.00	0.01	0.05	0.18	1722.88

Table B1-424. Annual Idling Emissions 2018 Proposed Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	Heavy Duty Trucks	Diesel	In-Gate	482,268	10	0.21	0.24	1.45	5.00	644	0.002	0.002	0.000	0.000	0.000	0.000	0.002	0.002	0.002	0.006	0.010	0.000	643.86
2018	Heavy Duty Trucks	Diesel	Out-Gate	482,268	6	0.13	0.14	0.87	3.00	386	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.004	0.006	0.000	386.32
2018	Heavy Duty Trucks	Diesel	On-terminal	482,268	24	0.51	0.58	3.47	12.00	1544	0.004	0.004	0.000	0.000	0.000	0.000	0.004	0.004	0.004	0.015	0.024	0.001	1545.26
2018	Heavy Duty Trucks	LNG	In-Gate	43,078	10	0.02	0.02	0.13	0.45	57	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	57.51
2018	Heavy Duty Trucks	LNG	Out-Gate	43,078	6	0.01	0.01	0.08	0.27	34	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	34.51
2018	Heavy Duty Trucks	LNG	On-terminal	43,078	24	0.05	0.05	0.31	1.07	138	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.000	138.03

Table B1-425. Peak Day Idling 2018 Proposed Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	Heavy Duty Trucks	Diesel	In-Gate	2,038	10	1.78	2.03	12.23	42.27	5440	0.015	0.014	0.000	0.000	0.000	0.000	0.015	0.014	0.015	0.052	0.083	0.002	5442.71
2018	Heavy Duty Trucks	Diesel	Out-Gate	2,038	6	1.07	1.22	7.34	25.36	3264	0.009	0.008	0.000	0.000	0.000	0.000	0.009	0.008	0.009	0.031	0.050	0.001	3265.63
2018	Heavy Duty Trucks	Diesel	On-terminal	2,038	24	4.28	4.87	29.35	101.45	13056	0.035	0.034	0.000	0.000	0.000	0.000	0.035	0.034	0.035	0.125	0.199	0.006	13062.52
2018	Heavy Duty Trucks	LNG	In-Gate	182	10	0.16	0.18	1.09	3.78	486	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.005	0.007	0.000	486.17
2018	Heavy Duty Trucks	LNG	Out-Gate	182	6	0.10	0.11	0.66	2.27	292	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.003	0.004	0.000	291.70
2018	Heavy Duty Trucks	LNG	On-terminal	182	24	0.38	0.44	2.62	9.06	1166	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.011	0.018	0.001	1166.80

China Shipping Operations Data Needs	Analysis Year	2023

Table B1-426. On-site Truck Activities 2023 - Proposed Mitigated

Parameter	Values
Annual number visits	674,190
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	1.5

Table B1-427. Port Trucks Age Distribution for Calendar Year Fleet 2023 - Proposed Mitigated

	Calendar Year
	2023
% Trips by LNG Trucks	8.2%
Model Year	(%)
2024	0.0004
2023	0.0019
2022	0.0033
2021	0.0050
2020	0.0066
2019	0.0103
2018	0.0220
2017	0.0441
2016	0.0747
2015	0.1004
2014	0.1196
2013	0.1380
2012	0.1464
2011	0.1598
2010	0.1675
TOTAL	1.0000

On-terminal Truck Emissions

95% reduction for LNG trucks

Table B1-428. Emission Factors 2023 Proposed Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	Heavy Duty Trucks	Diesel	15	0.13	0.15	0.87	7.82	2939	0.01	0.01	0.04	0.06	0.01	0.03	0.11	0.05	0.01	0.02	0.01	0.28	3023.11
2023	Heavy Duty Trucks	LNG	15	0.13	0.15	0.87	7.82	2939	0.0120	0.0115	0.04	0.06	0.01	0.03	0.11	0.05	0.0006	0.02	0.01	0.28	3023.11
				Idling Emission Factors (g/hr)																	
2023	Heavy Duty Trucks	Diesel	idling	2.37	2.70	34.99	27.98	6259	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.06	0.11	0.00	6263.07
2023	Heavy Duty Trucks	LNG	idling	2.37	2.70	34.99	27.98	6259	0.0101	0.0096	0.00	0.00	0.00	0.00	0.01	0.01	0.0005	0.06	0.11	0.00	6263.07

Table B1-429. Annual Running Emissions 2023 Proposed Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	HDT	Diesel	1.5	618,907	0.14	0.15	0.89	8.00	3008	0.01	0.01	0.04	0.06	0.01	0.03	0.11	0.05	0.01	0.02	0.01	0.29	3093.68
2023	HDT	LNG	1.5	55,284	0.01	0.01	0.08	0.71	269	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	276.34

Table B1-430. Peak Day Running Emissions 2023 Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	HDT	Diesel	0.00405	1.10	1.25	7.18	64.81	24,358	0.10	0.10	0.29	0.50	0.07	0.22	0.90	0.39	0.10	0.13	0.07	2.33	25054.73
2023	HDT	LNG	0.00405	0.10	0.11	0.64	5.79	2176	0.01	0.01	0.03	0.05	0.01	0.02	0.08	0.03	0.00	0.01	0.01	0.21	2238.00

Table B1-431. Annual Idling Emissions 2023 Proposed Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	Heavy Duty Trucks	Diesel	In-Gate	618,907	10	0.27	0.31	3.98	3.18	712	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.007	0.013	0.000	712.14
2023	Heavy Duty Trucks	Diesel	Out-Gate	618,907	6	0.16	0.18	2.39	1.91	427	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.004	0.008	0.000	427.28
2023	Heavy Duty Trucks	Diesel	On-terminal	618,907	24	0.65	0.74	9.55	7.64	1708	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.003	0.016	0.030	0.001	1709.13
2023	Heavy Duty Trucks	LNG	In-Gate	55,284	10	0.02	0.03	0.36	0.28	64	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	63.61
2023	Heavy Duty Trucks	LNG	Out-Gate	55,284	6	0.01	0.02	0.21	0.17	38	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	38.17
2023	Heavy Duty Trucks	LNG	On-terminal	55,284	24	0.06	0.07	0.85	0.68	153	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.003	0.000	152.67

Table B1-432. Peak Day Idling 2023 Proposed Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	Heavy Duty Trucks	Diesel	In-Gate	2,506	10	2.18	2.48	32.22	25.77	5764	0.009	0.009	0.000	0.000	0.000	0.000	0.009	0.009	0.009	0.055	0.101	0.003	5767.30
2023	Heavy Duty Trucks	Diesel	Out-Gate	2,506	6	1.31	1.49	19.33	15.46	3458	0.006	0.005	0.000	0.000	0.000	0.000	0.006	0.005	0.006	0.033	0.061	0.002	3460.38
2023	Heavy Duty Trucks	Diesel	On-terminal	2,506	24	5.23	5.96	77.33	61.84	13833	0.022	0.021	0.000	0.000	0.000	0.000	0.022	0.021	0.022	0.132	0.243	0.008	13841.53
2023	Heavy Duty Trucks	LNG	In-Gate	224	10	0.19	0.22	2.88	2.30	515	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.005	0.009	0.000	515.16
2023	Heavy Duty Trucks	LNG	Out-Gate	224	6	0.12	0.13	1.73	1.38	309	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.005	0.000	309.10
2023	Heavy Duty Trucks	LNG	On-terminal	224	24	0.47	0.53	6.91	5.52	1236	0.002	0.002	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.012	0.022	0.001	1236.39

China Shipping Operations Data Needs	Analysis Year	2030

Table B1-433. On- site Truck Activities 2030 - Proposed Mitigated

Parameter	Values
Annual number of visits	750,908
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	1.5

Table B1-434. Port Trucks Age Distribution for Calendar Year Fleet 2030 - Proposed Mitigated

	Calendar Year
	2030
% Trips by LNG Trucks	8.2%
Model Year	**(%)**
2031	0.000118685
2030	0.000617944
2029	0.001348074
2028	0.002280696
2027	0.003269243
2026	0.004902176
2025	0.009273635
2024	0.018322149
2023	0.03270033
2022	0.04763331
2021	0.060859596
2020	0.072169307
2019	0.081439662
2018	0.08835619
2017	0.091072318
2016	0.088599925
2015	0.082465223
2014	0.076061823
2013	0.070358348
2012	0.06255039
2011	0.055890733
2010	0.049710242
TOTAL	1.0000

On-terminal Truck Emissions

95% reduction for LNG trucks

Table B1-435. Emission Factors 2030 Proposed Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	Heavy Duty Trucks	Diesel	15	0.08	0.09	0.82	8.19	2342	0.01	0.01	0.04	0.06	0.01	0.03	0.11	0.04	0.01	0.01	0.01	0.23	2412.41
2030	Heavy Duty Trucks	LNG	15	0.08	0.09	0.82	8.19	2342	0.0106	0.0101	0.04	0.06	0.01	0.03	0.11	0.04	0.0005	0.01	0.01	0.23	2412.41
				Idling Emission Factors (g/hr)																	
2030	Heavy Duty Trucks	Diesel	idling	2.37	2.70	34.99	27.98	5737	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.05	0.11	0.00	5740.28
2030	Heavy Duty Trucks	LNG	idling	2.37	2.70	34.99	27.98	5737	0.0101	0.0096	0.00	0.00	0.00	0.00	0.01	0.01	0.0005	0.05	0.11	0.00	5740.28

Table B1-436. Annual Running Emissions 2030 Proposed Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	HDT	Diesel	1.5	689,334	0.09	0.10	0.94	9.34	2670	0.01	0.01	0.04	0.07	0.01	0.03	0.12	0.05	0.01	0.02	0.01	0.27	2749.64
2030	HDT	LNG	1.5	61,574	0.01	0.01	0.08	0.83	238	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	245.61

Table B1-437. Peak Day Running Emissions 2030 Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	HDT	Diesel	0.00405	0.72	0.82	7.61	75.64	21,623	0.10	0.09	0.33	0.56	0.08	0.24	0.98	0.42	0.10	0.12	0.05	2.16	22268.52
2030	HDT	LNG	0.00405	0.06	0.07	0.68	6.76	1931	0.01	0.01	0.03	0.05	0.01	0.02	0.09	0.04	0.00	0.01	0.00	0.19	1989.13

Table B1-438. Annual Idling Emissions 2030 Proposed Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	Heavy Duty Trucks	Diesel	In-Gate	689,334	10	0.30	0.34	4.43	3.54	727	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.007	0.014	0.000	726.97
2030	Heavy Duty Trucks	Diesel	Out-Gate	689,334	6	0.18	0.20	2.66	2.13	436	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.004	0.008	0.000	436.18
2030	Heavy Duty Trucks	Diesel	On-terminal	689,334	24	0.72	0.82	10.63	8.51	1744	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.003	0.017	0.033	0.001	1744.73
2030	Heavy Duty Trucks	LNG	In-Gate	61,574	10	0.03	0.03	0.40	0.32	65	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	64.94
2030	Heavy Duty Trucks	LNG	Out-Gate	61,574	6	0.02	0.02	0.24	0.19	39	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	38.96
2030	Heavy Duty Trucks	LNG	On-terminal	61,574	24	0.06	0.07	0.95	0.76	156	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.003	0.000	155.85

Table B1-439. Peak Day Idling 2030 Proposed Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	Heavy Duty Trucks	Diesel	In-Gate	2,791	10	2.43	2.76	35.89	28.70	5884	0.010	0.010	0.000	0.000	0.000	0.000	0.010	0.010	0.010	0.056	0.113	0.003	5887.40
2030	Heavy Duty Trucks	Diesel	Out-Gate	2,791	6	1.46	1.66	21.53	17.22	3530	0.006	0.006	0.000	0.000	0.000	0.000	0.006	0.006	0.006	0.034	0.068	0.002	3532.44
2030	Heavy Duty Trucks	Diesel	On-terminal	2,791	24	5.83	6.64	86.13	68.88	14121	0.025	0.024	0.000	0.000	0.000	0.000	0.025	0.024	0.025	0.135	0.271	0.007	14129.76
2030	Heavy Duty Trucks	LNG	In-Gate	249	10	0.22	0.25	3.21	2.56	526	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.005	0.010	0.000	525.89
2030	Heavy Duty Trucks	LNG	Out-Gate	249	6	0.13	0.15	1.92	1.54	315	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.003	0.006	0.000	315.53
2030	Heavy Duty Trucks	LNG	On-terminal	249	24	0.52	0.59	7.69	6.15	1261	0.002	0.002	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.012	0.024	0.001	1262.14

China Shipping Operations Data Needs	Analysis Year	2036

Table B1-440. On-site Truck Activities 2036 - Proposed Mitigated

Parameter	Values
Annual number of visits	756,113
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	1.5

Table B1-441. Port Trucks Age Distribution for Calendar Year Fleet 2036 - Proposed Mitigated

	Calendar Year
	2036
% Trips by LNG Trucks	8.2%
Model Year	**(%)**
2037	0.0001
2036	0.0005
2035	0.0011
2034	0.0019
2033	0.0028
2032	0.0042
2031	0.0080
2030	0.0157
2029	0.0278
2028	0.0408
2027	0.0525
2026	0.0631
2025	0.0719
2024	0.0779
2023	0.0794
2022	0.0757
2021	0.0699
2020	0.0644
2019	0.0591
2018	0.0533
2017	0.0470
2016	0.0410
2015	0.0355
2014	0.0305
2013	0.0254
2012	0.0203
2011	0.0166
2010	0.0137
TOTAL	1.0000

On-terminal Truck Emissions

95% reduction for LNG trucks

Table B1-442. Emission Factors 2036 Proposed Mitigated

				Running Emission Factors (g/mile)																
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	Heavy Duty Trucks	Diesel	15	0.06	0.06	0.79	8.23	1972	0.01	0.01	0.04	0.06	0.01	0.03	0.11	0.04	0.01	0.01	0.00	0.20	2031.96
2036	Heavy Duty Trucks	LNG	15	0.06	0.06	0.79	8.23	1972	0.0097	0.0093	0.04	0.06	0.01	0.03	0.11	0.04	0.0005	0.01	0.00	0.20	2031.96
				Idling Emission Factors (g/hr)																	
2036	Heavy Duty Trucks	Diesel	idling	2.37	2.70	34.99	27.98	5113	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.05	0.11	0.00	5116.83
2036	Heavy Duty Trucks	LNG	idling	2.37	2.70	34.99	27.98	5113	0.0101	0.0096	0.00	0.00	0.00	0.00	0.01	0.01	0.0005	0.05	0.11	0.00	5116.83

Table B1-443. Annual Running Emissions 2036 Proposed Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	HDT	Diesel	1.5	694,112	0.06	0.07	0.91	9.44	2264	0.01	0.01	0.04	0.07	0.01	0.03	0.12	0.05	0.01	0.01	0.00	0.23	2332.07
2036	HDT	LNG	1.5	62,001	0.01	0.01	0.08	0.84	202	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	208.31

Table B1-444. Peak Day Running Emissions 2036 Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	HDT	Diesel	0.00405	0.53	0.60	7.34	76.48	18,333	0.09	0.09	0.33	0.56	0.08	0.24	0.98	0.41	0.09	0.10	0.04	1.85	18886.70
2036	HDT	LNG	0.00405	0.05	0.05	0.66	6.83	1638	0.01	0.01	0.03	0.05	0.01	0.02	0.09	0.04	0.00	0.01	0.00	0.17	1687.05

Table B1-445. Annual Idling Emissions 2036 Proposed Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	Heavy Duty Trucks	Diesel	In-Gate	694,112	10	0.30	0.34	4.46	3.57	652	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.006	0.014	0.000	652.50
2036	Heavy Duty Trucks	Diesel	Out-Gate	694,112	6	0.18	0.21	2.68	2.14	391	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.004	0.008	0.000	391.50
2036	Heavy Duty Trucks	Diesel	On-terminal	694,112	24	0.72	0.83	10.71	8.56	1565	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.003	0.015	0.034	0.001	1566.01
2036	Heavy Duty Trucks	LNG	In-Gate	62,001	10	0.03	0.03	0.40	0.32	58	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	58.28
2036	Heavy Duty Trucks	LNG	Out-Gate	62,001	6	0.02	0.02	0.24	0.19	35	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	34.97
2036	Heavy Duty Trucks	LNG	On-terminal	62,001	24	0.06	0.07	0.96	0.76	140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.003	0.000	139.88

Table B1-446. Peak Day Idling 2036 Proposed Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	Heavy Duty Trucks	Diesel	In-Gate	2,811	10	2.45	2.78	36.14	28.90	5281	0.010	0.010	0.000	0.000	0.000	0.000	0.010	0.010	0.010	0.050	0.114	0.003	5284.35
2036	Heavy Duty Trucks	Diesel	Out-Gate	2,811	6	1.47	1.67	21.68	17.34	3168	0.006	0.006	0.000	0.000	0.000	0.000	0.006	0.006	0.006	0.030	0.068	0.002	3170.61
2036	Heavy Duty Trucks	Diesel	On-terminal	2,811	24	5.87	6.68	86.72	69.36	12674	0.025	0.024	0.000	0.000	0.000	0.000	0.025	0.024	0.025	0.121	0.273	0.006	12682.44
2036	Heavy Duty Trucks	LNG	In-Gate	251	10	0.22	0.25	3.23	2.58	472	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.005	0.010	0.000	472.02
2036	Heavy Duty Trucks	LNG	Out-Gate	251	6	0.13	0.15	1.94	1.55	283	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.003	0.006	0.000	283.21
2036	Heavy Duty Trucks	LNG	On-terminal	251	24	0.52	0.60	7.75	6.20	1132	0.002	0.002	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.011	0.024	0.001	1132.85

China Shipping Operations Data Needs	Analysis Year	2045

Table B1-447. On-site Truck Activities 2045 - Proposed Mitigated

Parameter	Values
Annual number of visits	757,031
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	1.5

Table B1-448. Port Trucks Age Distribution for Calendar Year Fleet 2045 - Proposed Mitigated

	Calendar Year
	2045
% Trips by LNG Trucks	8.2%
Model Year	(%)
2046	0.0001
2045	0.0005
2044	0.0012
2043	0.0020
2042	0.0028
2041	0.0043
2040	0.0080
2039	0.0157
2038	0.0279
2037	0.0410
2036	0.0529
2035	0.0635
2034	0.0719
2033	0.0772
2032	0.0778
2031	0.0736
2030	0.0674
2029	0.0617
2028	0.0563
2027	0.0502
2026	0.0436
2025	0.0373
2024	0.0321
2023	0.0274
2022	0.0226
2021	0.0181
2020	0.0144
2019	0.0115
2018	0.0091
2017	0.0071
2016	0.0056
2015	0.0043
2014	0.0034
2013	0.0027
2012	0.0021
2011	0.0017
2010	0.0014
TOTAL	1.0000

2045 On-terminal Truck Emissions

95% reduction for LNG trucks

Table B1-449. Emission Factors 2045 Proposed Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	Heavy Duty Trucks	Diesel	15	0.05	0.05	0.77	8.20	1678	0.01	0.01	0.04	0.06	0.01	0.03	0.10	0.04	0.01	0.01	0.00	0.17	1728.83
2045	Heavy Duty Trucks	LNG	15	0.05	0.05	0.77	8.20	1678	0.0093	0.0089	0.04	0.06	0.01	0.03	0.10	0.04	0.0005	0.01	0.00	0.17	1728.83
				Idling Emission Factors (g/hr)																	
2045	Heavy Duty Trucks	Diesel	idling	2.37	2.70	34.99	27.98	4483	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.04	0.11	0.00	4486.01
2045	Heavy Duty Trucks	LNG	idling	2.37	2.70	34.99	27.98	4483	0.0101	0.0096	0.00	0.00	0.00	0.00	0.01	0.01	0.0005	0.04	0.11	0.00	4486.01

Table B1-450. Annual Running Emissions 2045 Proposed Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	HDT	Diesel	1.5	694,954	0.06	0.06	0.89	9.43	1928	0.01	0.01	0.04	0.07	0.01	0.03	0.12	0.05	0.01	0.01	0.00	0.20	1986.57
2045	HDT	LNG	1.5	62,077	0.00	0.01	0.08	0.84	172	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	177.45

Table B1-451. Peak Day Running Emissions 2045 Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	HDT	Diesel	0.00405	0.45	0.51	7.18	76.35	15,615	0.09	0.08	0.33	0.56	0.08	0.24	0.98	0.41	0.09	0.09	0.03	1.59	16088.66
2045	HDT	LNG	0.00405	0.04	0.05	0.64	6.82	1395	0.01	0.01	0.03	0.05	0.01	0.02	0.09	0.04	0.00	0.01	0.00	0.14	1437.11

Table B1-452. Annual Idling Emissions 2045 Proposed Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	Heavy Duty Trucks	Diesel	In-Gate	694,954	10	0.30	0.34	4.47	3.57	572	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.005	0.014	0.000	572.76
2045	Heavy Duty Trucks	Diesel	Out-Gate	694,954	6	0.18	0.21	2.68	2.14	343	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.003	0.008	0.000	343.65
2045	Heavy Duty Trucks	Diesel	On-terminal	694,954	24	0.73	0.83	10.72	8.57	1374	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.003	0.013	0.034	0.001	1374.61
2045	Heavy Duty Trucks	LNG	In-Gate	62,077	10	0.03	0.03	0.40	0.32	51	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	51.16
2045	Heavy Duty Trucks	LNG	Out-Gate	62,077	6	0.02	0.02	0.24	0.19	31	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	30.70
2045	Heavy Duty Trucks	LNG	On-terminal	62,077	24	0.06	0.07	0.96	0.77	123	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.003	0.000	122.79

Table B1-453. Peak Day Idling 2045 Proposed Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	Heavy Duty Trucks	Diesel	In-Gate	2,814	10	2.45	2.79	36.18	28.93	4635	0.010	0.010	0.000	0.000	0.000	0.000	0.010	0.010	0.010	0.044	0.114	0.002	4638.49
2045	Heavy Duty Trucks	Diesel	Out-Gate	2,814	6	1.47	1.67	21.71	17.36	2781	0.006	0.006	0.000	0.000	0.000	0.000	0.006	0.006	0.006	0.027	0.068	0.001	2783.10
2045	Heavy Duty Trucks	Diesel	On-terminal	2,814	24	5.88	6.69	86.82	69.44	11124	0.025	0.024	0.000	0.000	0.000	0.000	0.025	0.024	0.025	0.106	0.273	0.006	11132.38
2045	Heavy Duty Trucks	LNG	In-Gate	251	10	0.22	0.25	3.23	2.58	414	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.004	0.010	0.000	414.33
2045	Heavy Duty Trucks	LNG	Out-Gate	251	6	0.13	0.15	1.94	1.55	248	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.002	0.006	0.000	248.60
2045	Heavy Duty Trucks	LNG	On-terminal	251	24	0.52	0.60	7.76	6.20	994	0.002	0.002	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.009	0.024	0.000	994.40

China Shipping Operations Data Needs

Analysis Year	2012

Table B1-454. On-site truck activities in 2012 - FEIR Mitigated

Parameter	Values
Annual number visits	245,650
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	17
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	2

Table B1-455. Port Trucks Age Distribution for Calendar Year Fleet 2012 - FEIR Mitigated

	Calendar Year
Scenario: FEIR Mitigated	**2012**
% Trips by LNG Trucks	50.0%
Model Year	**(%)**
2013	0.0034
2012	0.0131
2011	0.0668
2010	0.0982
2009	0.3833
2008	0.2418
2007	0
TOTAL	1.000

2012 On-terminal Truck Emissions

Diesel from LNG trucks' mixed fuel

Table B1-456. Emission Factors 2012 FEIR Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	Heavy Duty Trucks	Diesel	15	1.23	1.40	2.96	12.50	2817	0.13	0.13	0.04	0.06	0.01	0.03	0.23	0.16	0.13	0.02	0.08	0.30	2907.52
2012	Heavy Duty Trucks	LNG	15	1.23	1.40	2.96	12.50	2817	0.13	0.13	0.04	0.06	0.01	0.03	0.23	0.16	0.0020	0.02	0.08	0.30	2907.52
				Idling Emission Factors (g/hr)																	
2012	Heavy Duty Trucks	Diesel	idling	3.08	3.51	16.18	70.73	7386.32	0.17	0.16	0.00	0.00	0.00	0.00	0.17	0.16	0.17	0.07	0.14	0.00	7390.86
2012	Heavy Duty Trucks	LNG	idling	3.08	3.51	16.18	70.73	7386.32	0.17	0.16	0.00	0.00	0.00	0.00	0.17	0.16	0.0026	0.07	0.14	0.00	7390.86

Table B1-457. Annual Running Emissions 2012 FEIR Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	HDT	Diesel	1.5	122,825	0.25	0.28	0.60	2.54	572	0.03	0.03	0.01	0.01	0.00	0.01	0.05	0.03	0.03	0.00	0.02	0.06	590.48
2012	HDT	LNG	1.5	122,825	0.25	0.28	0.60	2.54	572	0.03	0.03	0.01	0.01	0.00	0.01	0.05	0.03	0.00	0.00	0.02	0.06	590.48

Table B1-458. Peak Day Running Emissions 2012 FEIR Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	HDT	Diesel	0.00399	1.99	2.27	4.80	20.28	4,569	0.22	0.21	0.06	0.10	0.01	0.04	0.37	0.26	0.22	0.03	0.13	0.48	4715.98
2012	HDT	LNG	0.00399	1.99	2.27	4.80	20.28	4569	0.22	0.21	0.06	0.10	0.01	0.04	0.37	0.26	0.00	0.03	0.13	0.48	4715.98

Table B1-459. Annual Idling Emissions 2012 FEIR Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	Heavy Duty Trucks	Diesel	In-Gate	122,825	10	0.07	0.08	0.37	1.60	167	0.004	0.004	0.000	0.000	0.000	0.000	0.004	0.004	0.004	0.002	0.003	0.000	166.78
2012	Heavy Duty Trucks	Diesel	Out-Gate	122,825	6	0.04	0.05	0.22	0.96	100	0.002	0.002	0.000	0.000	0.000	0.000	0.002	0.002	0.002	0.001	0.002	0.000	100.07
2012	Heavy Duty Trucks	Diesel	On-terminal	122,825	17	0.12	0.13	0.62	2.71	283	0.007	0.006	0.000	0.000	0.000	0.000	0.007	0.006	0.007	0.003	0.005	0.000	283.52
2012	Heavy Duty Trucks	LNG	In-Gate	122,825	10	0.07	0.08	0.37	1.60	167	0.004	0.004	0.000	0.000	0.000	0.000	0.004	0.004	0.000	0.002	0.003	0.000	166.78
2012	Heavy Duty Trucks	LNG	Out-Gate	122,825	6	0.04	0.05	0.22	0.96	100	0.002	0.002	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.001	0.002	0.000	100.07
2012	Heavy Duty Trucks	LNG	On-terminal	122,825	17	0.12	0.13	0.62	2.71	283	0.007	0.006	0.000	0.000	0.000	0.000	0.007	0.006	0.000	0.003	0.005	0.000	283.52

Table B1-460. Peak Day Idling 2012 FEIR Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	Heavy Duty Trucks	Diesel	In-Gate	490	10	0.56	0.63	2.92	12.75	1331	0.031	0.030	0.000	0.000	0.000	0.000	0.031	0.030	0.031	0.013	0.026	0.001	1331.97
2012	Heavy Duty Trucks	Diesel	Out-Gate	490	6	0.33	0.38	1.75	7.65	799	0.019	0.018	0.000	0.000	0.000	0.000	0.019	0.018	0.019	0.008	0.015	0.000	799.18
2012	Heavy Duty Trucks	Diesel	On-terminal	490	17	0.94	1.08	4.96	21.67	2263	0.053	0.050	0.000	0.000	0.000	0.000	0.053	0.050	0.053	0.022	0.044	0.001	2264.35
2012	Heavy Duty Trucks	LNG	In-Gate	490	10	0.56	0.63	2.92	12.75	1331	0.031	0.030	0.000	0.000	0.000	0.000	0.031	0.030	0.000	0.013	0.026	0.001	1331.97
2012	Heavy Duty Trucks	LNG	Out-Gate	490	6	0.33	0.38	1.75	7.65	799	0.019	0.018	0.000	0.000	0.000	0.000	0.019	0.018	0.000	0.008	0.015	0.000	799.18
2012	Heavy Duty Trucks	LNG	On-terminal	490	17	0.94	1.08	4.96	21.67	2263	0.053	0.050	0.000	0.000	0.000	0.000	0.053	0.050	0.001	0.022	0.044	0.001	2264.35

China Shipping Operations Data Needs

Analysis Year	2014

Table B1-461. On-site Truck Activities 2014 - FEIR Mitigated

Parameter	Values
Annual number of two-way trips	554,937
Average Idling Time (min / truck trip)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/trip)	1.5

Table B1-462. Port Trucks Age Distribution for Calendar Year Fleet 2014 - FEIR Mitigated

	Calendar Year
	2014
% Trips by LNG Trucks (FEIR Mitigated Scenario)	70.0%
Model Year	**(%)**
2015	0.0100
2014	0.0203
2013	0.0383
2012	0.0307
2011	0.0854
2010	0.1772
2009	0.3448
2008	0.2822
2007	0.0081
2006	0.0007
2005	0.0003
2004	0.0001
2003	0.0001
2002	0.0000
2001	0.0001
2000	0.0006
1999	0.0001
1998	0.0004
1997	0.0001
1996	0.0002
1995	0.0000
1994	0.0001
1993	0.0000
1992	0.0000
1991	0.0000
1990	0.0000
1989-	0.0000
TOTAL	1.0000

2014 On-terminal Truck Emissions

95% reduction for LNG trucks

Table B1-463. Emission Factors 2014 FEIR Mitigated

				Running Emission Factors (g/mile)																
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	Heavy Duty Trucks	Diesel	15	0.96	1.09	2.68	11.15	2768	0.06	0.06	0.04	0.06	0.01	0.03	0.16	0.09	0.06	0.02	0.06	0.29	2856.88
2014	Heavy Duty Trucks	LNG	15	0.96	1.09	2.68	11.15	2768	0.0600	0.0574	0.04	0.06	0.01	0.03	0.16	0.09	0.0030	0.02	0.06	0.29	2856.88
				Idling Emission Factors (g/hr)																	
2014	Heavy Duty Trucks	Diesel	idling	2.38	2.70	14.57	56.52	7360	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.07	0.11	0.00	7363.88
2014	Heavy Duty Trucks	LNG	idling	2.38	2.70	14.57	56.52	7360	0.0189	0.0181	0.00	0.00	0.00	0.00	0.02	0.02	0.0009	0.07	0.11	0.00	7363.88

Table B1-464. Annual Running Emissions 2014 FEIR Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	HDT	Diesel	1.5	166,481	0.26	0.30	0.74	3.07	762	0.02	0.02	0.01	0.02	0.00	0.01	0.04	0.03	0.02	0.00	0.02	0.08	786.42
2014	HDT	LNG	1.5	388,456	0.61	0.70	1.72	7.16	1778	0.04	0.04	0.02	0.04	0.01	0.02	0.10	0.06	0.00	0.01	0.04	0.19	1834.97

Table B1-465. Peak Day Running Emissions 2014 FEIR Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	HDT	Diesel	0.00416	2.19	2.49	6.14	25.52	6,336	0.14	0.13	0.08	0.14	0.02	0.06	0.36	0.21	0.14	0.04	0.15	0.67	6539.83
2014	HDT	LNG	0.00416	5.11	5.82	14.33	59.56	14783	0.32	0.31	0.19	0.33	0.05	0.14	0.84	0.49	0.02	0.09	0.34	1.57	15259.61

Table B1-466. Annual Idling Emissions 2014 FEIR Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	Heavy Duty Trucks	Diesel	In-Gate	166,481	10	0.07	0.08	0.45	1.73	225	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.002	0.003	0.000	225.23
2014	Heavy Duty Trucks	Diesel	Out-Gate	166,481	6	0.04	0.05	0.27	1.04	135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.000	135.14
2014	Heavy Duty Trucks	Diesel	On-terminal	166,481	24	0.17	0.20	1.07	4.15	540	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.005	0.008	0.000	540.55
2014	Heavy Duty Trucks	LNG	In-Gate	388,456	10	0.17	0.19	1.04	4.03	525	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.005	0.008	0.000	525.53
2014	Heavy Duty Trucks	LNG	Out-Gate	388,456	6	0.10	0.12	0.62	2.42	315	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.003	0.005	0.000	315.32
2014	Heavy Duty Trucks	LNG	On-terminal	388,456	24	0.41	0.46	2.50	9.68	1261	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.012	0.019	0.001	1261.28

Table B1-467. Peak Day Idling 2014 FEIR Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	Heavy Duty Trucks	Diesel	In-Gate	692	10	0.60	0.69	3.71	14.37	1872	0.005	0.005	0.000	0.000	0.000	0.000	0.005	0.005	0.005	0.018	0.028	0.001	1872.97
2014	Heavy Duty Trucks	Diesel	Out-Gate	692	6	0.36	0.41	2.22	8.62	1123	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.003	0.011	0.017	0.000	1123.78
2014	Heavy Duty Trucks	Diesel	On-terminal	692	24	1.45	1.65	8.89	34.50	4493	0.012	0.011	0.000	0.000	0.000	0.000	0.012	0.011	0.012	0.043	0.067	0.002	4495.13
2014	Heavy Duty Trucks	LNG	In-Gate	1,615	10	1.41	1.61	8.65	33.54	4368	0.011	0.011	0.000	0.000	0.000	0.000	0.011	0.011	0.001	0.042	0.065	0.002	4370.27
2014	Heavy Duty Trucks	LNG	Out-Gate	1,615	6	0.85	0.96	5.19	20.12	2621	0.007	0.006	0.000	0.000	0.000	0.000	0.007	0.006	0.000	0.025	0.039	0.001	2622.16
2014	Heavy Duty Trucks	LNG	On-terminal	1,615	24	3.38	3.85	20.75	80.50	10483	0.027	0.026	0.000	0.000	0.000	0.000	0.027	0.026	0.001	0.100	0.157	0.005	10488.64

China Shipping Operations Data Needs

Analysis Year	2018

Table B1-468. On-site truck activities in 2018 - FEIR Mitigated

Parameter	Values
Annual number visits	525,346
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	1.5

Table B1-469. Port Trucks Age Distribution for Calendar Year Fleet 2018 - FEIR Mitigated

	Calendar Year
Scenario: FEIR Mitigated	**2018**
% Trips by LNG Trucks	100.0%
Model Year	**(%)**
2019	0.0002
2018	0.0009
2017	0.0021
2016	0.0132
2015	0.0279
2014	0.0219
2013	0.0361
2012	0.0534
2011	0.1016
2010	0.1644
2009	0.2604
2008	0.2271
2007	0.0908
TOTAL	1.0000

2018 On-terminal Truck Emissions

Diesel from LNG trucks' mixed fuel

Table B1-470. Emission Factors 2018 FEIR Mitigated

				Running Emission Factors (g/mile)																
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	Heavy Duty Trucks	Diesel	15	1.12	1.27	3.05	12.30	2772	0.09	0.09	0.04	0.06	0.01	0.03	0.19	0.12	0.09	0.02	0.08	0.29	2861.33
2018	Heavy Duty Trucks	LNG	15	1.12	1.27	3.05	12.30	2772	0.09	0.09	0.04	0.06	0.01	0.03	0.19	0.12	0.0045	0.02	0.08	0.29	2861.33
				Idling Emission Factors (g/hr)																	
2018	Heavy Duty Trucks	Diesel	idling	2.38	2.71	16.33	56.44	7263.18	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.07	0.11	0.00	7266.92
2018	Heavy Duty Trucks	LNG	idling	2.38	2.71	16.33	56.44	7263.18	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.0010	0.07	0.11	0.00	7266.92

Table B1-471. Annual Running Emissions 2018 FEIR Mitigated

					Annual Emissions (tons/year)																
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	HDT	Diesel	1.5	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2018	HDT	LNG	1.5	525,346	0.97	1.11	2.65	10.69	2408	0.08	0.07	0.03	0.05	0.01	0.02	0.16	0.10	0.00	0.01	0.07	0.25	2485.47

Table B1-472. Peak Day Running Emissions 2018 FEIR Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	HDT	Diesel	0.00423	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2018	HDT	LNG	0.00423	8.21	9.35	22.37	90.35	20358	0.66	0.63	0.26	0.45	0.07	0.19	1.37	0.89	0.03	0.12	0.55	2.14	21010.67

Table B1-473. Annual Idling Emissions 2018 FEIR Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	Heavy Duty Trucks	Diesel	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2018	Heavy Duty Trucks	Diesel	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2018	Heavy Duty Trucks	Diesel	On-terminal	0	24	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2018	Heavy Duty Trucks	LNG	In-Gate	525,346	10	0.23	0.26	1.58	5.45	701	0.002	0.002	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.007	0.011	0.000	701.37
2018	Heavy Duty Trucks	LNG	Out-Gate	525,346	6	0.14	0.16	0.95	3.27	421	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.004	0.006	0.000	420.82
2018	Heavy Duty Trucks	LNG	On-terminal	525,346	24	0.55	0.63	3.78	13.07	1682	0.005	0.004	0.000	0.000	0.000	0.000	0.005	0.004	0.000	0.016	0.026	0.001	1683.29

Table B1-474. Peak Day Idling 2018 FEIR Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	Heavy Duty Trucks	Diesel	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2018	Heavy Duty Trucks	Diesel	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2018	Heavy Duty Trucks	Diesel	On-terminal	0	24	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2018	Heavy Duty Trucks	LNG	In-Gate	2,220	10	1.94	2.21	13.32	46.05	5926	0.016	0.015	0.000	0.000	0.000	0.000	0.016	0.015	0.001	0.057	0.090	0.003	5928.88
2018	Heavy Duty Trucks	LNG	Out-Gate	2,220	6	1.17	1.33	7.99	27.63	3555	0.010	0.009	0.000	0.000	0.000	0.000	0.010	0.009	0.000	0.034	0.054	0.002	3557.33
2018	Heavy Duty Trucks	LNG	On-terminal	2,220	24	4.66	5.31	31.98	110.51	14222	0.038	0.037	0.000	0.000	0.000	0.000	0.038	0.037	0.002	0.136	0.217	0.006	14229.32

China Shipping Operations Data Needs

Analysis Year	2023

Table B1-475. On-site Truck Activities 2023 - FEIR Mitigated

Parameter	Values
Annual number visits	674,190
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	1.5

Table B1-476. Port Trucks Age Distribution for Calendar Year Fleet 2023 - FEIR Mitigated

	Calendar Year
	2023
% Trips by LNG Trucks (FEIR Mitigated Scenario)	100.0%
Model Year	**(%)**
2024	0.0004
2023	0.0019
2022	0.0033
2021	0.0050
2020	0.0066
2019	0.0103
2018	0.0220
2017	0.0441
2016	0.0747
2015	0.1004
2014	0.1196
2013	0.1380
2012	0.1464
2011	0.1598
2010	0.1675
TOTAL	1.0000

2023 On-terminal Truck Emissions

95% reduction for LNG trucks

Table B1-477. Emission Factors 2023 FEIR Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	Heavy Duty Trucks	Diesel	15	0.13	0.15	0.87	7.82	2939	0.0120	0.0115	0.04	0.06	0.01	0.03	0.11	0.05	0.01	0.02	0.01	0.28	3023.11
2023	Heavy Duty Trucks	LNG	15	0.13	0.15	0.87	7.82	2939	0.0120	0.0115	0.04	0.06	0.01	0.03	0.11	0.05	0.0006	0.02	0.01	0.28	3023.11
				Idling Emission Factors (g/hr)																	
2023	Heavy Duty Trucks	Diesel	idling	2.37	2.70	34.99	27.98	6259	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.06	0.11	0.00	6263.07
2023	Heavy Duty Trucks	LNG	idling	2.37	2.70	34.99	27.98	6259	0.0101	0.0096	0.00	0.00	0.00	0.00	0.01	0.01	0.0005	0.06	0.11	0.00	6263.07

Table B1-478. Annual Running Emissions 2023 FEIR Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	HDT	Diesel	1.5	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	HDT	LNG	1.5	674,190	0.15	0.17	0.97	8.72	3276	0.01	0.01	0.04	0.07	0.01	0.03	0.12	0.05	0.00	0.02	0.01	0.31	3370.02

Table B1-479. Peak Day Running Emissions 2023 FEIR Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	HDT	Diesel	0.00405	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2023	HDT	LNG	0.00405	1.20	1.36	7.82	70.60	26533	0.11	0.10	0.32	0.55	0.08	0.24	0.98	0.42	0.01	0.14	0.08	2.54	27292.73

Table B1-480. Annual Idling Emissions 2023 FEIR Mitigated

			Activity			Annual Emissions (tons/year)																	
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	Heavy Duty Trucks	Diesel	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2023	Heavy Duty Trucks	Diesel	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2023	Heavy Duty Trucks	Diesel	On-terminal	0	24	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2023	Heavy Duty Trucks	LNG	In-Gate	674,190	10	0.29	0.33	4.33	3.47	775	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.007	0.014	0.000	775.75
2023	Heavy Duty Trucks	LNG	Out-Gate	674,190	6	0.18	0.20	2.60	2.08	465	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.004	0.008	0.000	465.45
2023	Heavy Duty Trucks	LNG	On-terminal	674,190	24	0.70	0.80	10.40	8.32	1861	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.018	0.033	0.001	1861.80

Table B1-481. Peak Day Idling FEIR Mitigated

			Activity			Peak Day Emissions (lb/day)																	
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	Heavy Duty Trucks	Diesel	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2023	Heavy Duty Trucks	Diesel	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2023	Heavy Duty Trucks	Diesel	On-terminal	0	24	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2023	Heavy Duty Trucks	LNG	In-Gate	2,730	10	2.38	2.70	35.10	28.07	6279	0.010	0.010	0.000	0.000	0.000	0.000	0.010	0.010	0.001	0.060	0.110	0.003	6282.47
2023	Heavy Duty Trucks	LNG	Out-Gate	2,730	6	1.43	1.62	21.06	16.84	3767	0.006	0.006	0.000	0.000	0.000	0.000	0.006	0.006	0.000	0.036	0.066	0.002	3769.48
2023	Heavy Duty Trucks	LNG	On-terminal	2,730	24	5.70	6.49	84.24	67.37	15069	0.024	0.023	0.000	0.000	0.000	0.000	0.024	0.023	0.001	0.144	0.265	0.008	15077.92

China Shipping Operations Data Needs

Analysis Year	2030

Table B1-482. On -site Truck Activities 2030 - FEIR Mitigated

Parameter	Values
Annual number of visits	750,908
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	1.5

Table B1-483. Port Trucks Age Distribution for Calendar Year Fleet 2030 FEIR Mitigated

	Calendar Year
	2030
% Trips by LNG Trucks (FEIR Mitigated Scenario)	100.0%
Model Year	(%)
2031	0.000118685
2030	0.000617944
2029	0.001348074
2028	0.002280696
2027	0.003269243
2026	0.004902176
2025	0.009273635
2024	0.018322149
2023	0.03270033
2022	0.04763331
2021	0.060859596
2020	0.072169307
2019	0.081439662
2018	0.08835619
2017	0.091072318
2016	0.088599925
2015	0.082465223
2014	0.076061823
2013	0.070358348
2012	0.06255039
2011	0.055890733
2010	0.049710242
TOTAL	1.0000

On-terminal Truck Emissions

95% reduction for LNG trucks

Table B1-484. Emission Factors 2030 FEIR Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	Heavy Duty Trucks	Diesel	15	0.08	0.09	0.82	8.19	2342	0.01	0.01	0.04	0.06	0.01	0.03	0.11	0.04	0.01	0.01	0.01	0.23	2412.41
2030	Heavy Duty Trucks	LNG	15	0.08	0.09	0.82	8.19	2342	0.0106	0.0101	0.04	0.06	0.01	0.03	0.11	0.04	0.0005	0.01	0.01	0.23	2412.41
				Idling Emission Factors (g/hr)																	
2030	Heavy Duty Trucks	Diesel	idling	2.37	2.70	34.99	27.98	5737	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.05	0.11	0.00	5740.28
2030	Heavy Duty Trucks	LNG	idling	2.37	2.70	34.99	27.98	5737	0.0101	0.0096	0.00	0.00	0.00	0.00	0.01	0.01	0.0005	0.05	0.11	0.00	5740.28

Table B1-485. Annual Running Emissions 2030 FEIR Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	HDT	Diesel	1.5	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2030	HDT	LNG	1.5	750,908	0.10	0.11	1.02	10.17	2908	0.01	0.01	0.04	0.08	0.01	0.03	0.13	0.06	0.00	0.02	0.01	0.29	2995.25

Table B1-486. Peak Day Running Emissions 2030 FEIR Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	HDT	Diesel	0.00405	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2030	HDT	LNG	0.00405	0.78	0.89	8.29	82.40	23554	0.11	0.10	0.36	0.61	0.09	0.26	1.07	0.45	0.01	0.13	0.05	2.36	24257.65

Table B1-487. Annual Idling Emissions 2030 FEIR Mitigated

			Activity			Annual Emissions (tons/year)																	
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	Heavy Duty Trucks	Diesel	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2030	Heavy Duty Trucks	Diesel	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2030	Heavy Duty Trucks	Diesel	On-terminal	0	24	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2030	Heavy Duty Trucks	LNG	In-Gate	750,908	10	0.33	0.37	4.83	3.86	791	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.008	0.015	0.000	791.91
2030	Heavy Duty Trucks	LNG	Out-Gate	750,908	6	0.20	0.22	2.90	2.32	475	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.005	0.009	0.000	475.14
2030	Heavy Duty Trucks	LNG	On-terminal	750,908	24	0.78	0.89	11.58	9.27	1899	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.018	0.036	0.001	1900.57

Table B1-488. Peak Day Idling 2030 FEIR Mitigated

			Activity			Peak Day Emissions (lb/day)																	
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	Heavy Duty Trucks	Diesel	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2030	Heavy Duty Trucks	Diesel	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2030	Heavy Duty Trucks	Diesel	On-terminal	0	24	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2030	Heavy Duty Trucks	LNG	In-Gate	3,041	10	2.65	3.01	39.09	31.26	6409	0.011	0.011	0.000	0.000	0.000	0.000	0.011	0.011	0.001	0.061	0.123	0.003	6413.29
2030	Heavy Duty Trucks	LNG	Out-Gate	3,041	6	1.59	1.81	23.46	18.76	3846	0.007	0.006	0.000	0.000	0.000	0.000	0.007	0.006	0.000	0.037	0.074	0.002	3847.97
2030	Heavy Duty Trucks	LNG	On-terminal	3,041	24	6.35	7.23	93.82	75.03	15382	0.027	0.026	0.000	0.000	0.000	0.000	0.027	0.026	0.001	0.147	0.295	0.008	15391.90

China Shipping Operations Data Needs

Analysis Year	2036

Table B1-489. On-site Truck Activities 2036 - FEIR Mitigated

Parameter	Values
Annual number of visits	756,113
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	1.5

Table B1-490. Port Trucks Age Distribution for Calendar Year Fleet 2036 - FEIR Mitigated

	Calendar Year
	2036
% Trips by LNG Trucks (FEIR Mitigated Scenario)	100.0%
Model Year	**(%)**
2037	0.0001
2036	0.0005
2035	0.0011
2034	0.0019
2033	0.0028
2032	0.0042
2031	0.0080
2030	0.0157
2029	0.0278
2028	0.0408
2027	0.0525
2026	0.0631
2025	0.0719
2024	0.0779
2023	0.0794
2022	0.0757
2021	0.0699
2020	0.0644
2019	0.0591
2018	0.0533
2017	0.0470
2016	0.0410
2015	0.0355
2014	0.0305
2013	0.0254
2012	0.0203
2011	0.0166
2010	0.0137
TOTAL	1.0000

On-terminal Truck Emissions

95% reduction for LNG trucks

Table B1-491. Emission Factors 2036 FEIR Mitigated

				Running Emission Factors (g/mile)																
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	Heavy Duty Trucks	Diesel	15	0.06	0.06	0.79	8.23	1972	0.01	0.01	0.04	0.06	0.01	0.03	0.11	0.04	0.01	0.01	0.00	0.20	2031.96
2036	Heavy Duty Trucks	LNG	15	0.06	0.06	0.79	8.23	1972	0.0097	0.0093	0.04	0.06	0.01	0.03	0.11	0.04	0.0005	0.01	0.00	0.20	2031.96
				Idling Emission Factors (g/hr)																	
2036	Heavy Duty Trucks	Diesel	idling	2.37	2.70	34.99	27.98	5113	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.05	0.11	0.00	5116.83
2036	Heavy Duty Trucks	LNG	idling	2.37	2.70	34.99	27.98	5113	0.0101	0.0096	0.00	0.00	0.00	0.00	0.01	0.01	0.0005	0.05	0.11	0.00	5116.83

Table B1-492. Annual Running Emissions 2036 FEIR Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	HDT	Diesel	1.5	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	HDT	LNG	1.5	756,113	0.07	0.08	0.99	10.29	2466	0.01	0.01	0.04	0.08	0.01	0.03	0.13	0.06	0.00	0.01	0.00	0.25	2540.38

Table B1-493. Peak Day Running Emissions 2036 FEIR Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	HDT	Diesel	0.00405	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2036	HDT	LNG	0.00405	0.57	0.65	7.99	83.31	19971	0.10	0.09	0.36	0.61	0.09	0.26	1.07	0.45	0.00	0.11	0.04	2.02	20573.74

Table B1-494. Annual Idling Emissions 2036 FEIR Mitigated

			Activity			Annual Emissions (tons/year)																	
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	Heavy Duty Trucks	Diesel	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2036	Heavy Duty Trucks	Diesel	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2036	Heavy Duty Trucks	Diesel	On-terminal	0	24	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2036	Heavy Duty Trucks	LNG	In-Gate	756,113	10	0.33	0.37	4.86	3.89	710	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.007	0.015	0.000	710.79
2036	Heavy Duty Trucks	LNG	Out-Gate	756,113	6	0.20	0.22	2.92	2.33	426	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.004	0.009	0.000	426.47
2036	Heavy Duty Trucks	LNG	On-terminal	756,113	24	0.79	0.90	11.67	9.33	1705	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.016	0.037	0.001	1705.89

Table B1-495. Peak Day Idling 2036 FEIR Mitigated

			Activity			Peak Day Emissions (lb/day)																	
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	Heavy Duty Trucks	Diesel	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2036	Heavy Duty Trucks	Diesel	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2036	Heavy Duty Trucks	Diesel	On-terminal	0	24	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2036	Heavy Duty Trucks	LNG	In-Gate	3,062	10	2.66	3.03	39.36	31.48	5752	0.011	0.011	0.000	0.000	0.000	0.000	0.011	0.011	0.001	0.055	0.124	0.003	5756.37
2036	Heavy Duty Trucks	LNG	Out-Gate	3,062	6	1.60	1.82	23.62	18.89	3451	0.007	0.007	0.000	0.000	0.000	0.000	0.007	0.007	0.000	0.033	0.074	0.002	3453.82
2036	Heavy Duty Trucks	LNG	On-terminal	3,062	24	6.39	7.28	94.47	75.55	13806	0.027	0.026	0.000	0.000	0.000	0.000	0.027	0.026	0.001	0.132	0.297	0.007	13815.29

China Shipping Operations Data Needs	Analysis Year	2045

Table B1-496. On-site Truck Activities 2045 - FEIR Mitigated

Parameter	Values
Annual number of visits	757,031
Average Idling Time (min / visit)	
At in-gate	10
At out-gate	6
On-terminal, not including at gate	24
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	1.5

Table B1-497. Port Trucks Age Distribution for Calendar Year Fleet 2045 - FEIR Mitigated

	Calendar Year
	2045
% Trips by LNG Trucks (FEIR Mitigated Scenario)	100.0%
Model Year	**(%)**
2046	0.0001
2045	0.0005
2044	0.0012
2043	0.0020
2042	0.0028
2041	0.0043
2040	0.0080
2039	0.0157
2038	0.0279
2037	0.0410
2036	0.0529
2035	0.0635
2034	0.0719
2033	0.0772
2032	0.0778
2031	0.0736
2030	0.0674
2029	0.0617
2028	0.0563
2027	0.0502
2026	0.0436
2025	0.0373
2024	0.0321
2023	0.0274
2022	0.0226
2021	0.0181
2020	0.0144
2019	0.0115
2018	0.0091
2017	0.0071
2016	0.0056
2015	0.0043
2014	0.0034
2013	0.0027
2012	0.0021
2011	0.0017
2010	0.0014
TOTAL	1.0000

2045 On-terminal Truck Emissions

95% reduction for LNG trucks

Table B1-498. Emission Factors 2045 FEIR Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	Heavy Duty Trucks	Diesel	15	0.05	0.05	0.77	8.20	1678	0.01	0.01	0.04	0.06	0.01	0.03	0.10	0.04	0.01	0.01	0.00	0.17	1728.83
2045	Heavy Duty Trucks	LNG	15	0.05	0.05	0.77	8.20	1678	0.0093	0.0089	0.04	0.06	0.01	0.03	0.10	0.04	0.0005	0.01	0.00	0.17	1728.83
				Idling Emission Factors (g/hr)																	
2045	Heavy Duty Trucks	Diesel	idling	2.37	2.70	34.99	27.98	4483	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.04	0.11	0.00	4486.01
2045	Heavy Duty Trucks	LNG	idling	2.37	2.70	34.99	27.98	4483	0.0101	0.0096	0.00	0.00	0.00	0.00	0.01	0.01	0.0005	0.04	0.11	0.00	4486.01

Table B1-499. Annual Running Emissions 2045 FEIR Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	HDT	Diesel	1.5	0	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2045	HDT	LNG	1.5	757,031	0.06	0.07	0.97	10.27	2100	0.01	0.01	0.04	0.08	0.01	0.03	0.13	0.05	0.00	0.01	0.00	0.21	2164.02

Table B1-500. Peak Day Running Emissions 2045 FEIR Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	HDT	Diesel	0.00405	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2045	HDT	LNG	0.00405	0.49	0.56	7.83	83.17	17010	0.09	0.09	0.36	0.61	0.09	0.26	1.06	0.44	0.00	0.10	0.03	1.73	17525.77

Table B1-501. Annual Idling Emissions 2045 FEIR Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	Heavy Duty Trucks	Diesel	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2045	Heavy Duty Trucks	Diesel	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2045	Heavy Duty Trucks	Diesel	On-terminal	0	24	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2045	Heavy Duty Trucks	LNG	In-Gate	757,031	10	0.33	0.37	4.87	3.89	623	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.006	0.015	0.000	623.92
2045	Heavy Duty Trucks	LNG	Out-Gate	757,031	6	0.20	0.22	2.92	2.33	374	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.004	0.009	0.000	374.35
2045	Heavy Duty Trucks	LNG	On-terminal	757,031	24	0.79	0.90	11.68	9.34	1496	0.003	0.003	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.014	0.037	0.001	1497.40

Table B1-502. Peak Day Idling 2045 FEIR Mitigated

			Activity			Peak Day Emissions (lb/day)																	
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	Heavy Duty Trucks	Diesel	In-Gate	0	10	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2045	Heavy Duty Trucks	Diesel	Out-Gate	0	6	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2045	Heavy Duty Trucks	Diesel	On-terminal	0	24	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2045	Heavy Duty Trucks	LNG	In-Gate	3,065	10	2.67	3.04	39.41	31.52	5049	0.011	0.011	0.000	0.000	0.000	0.000	0.011	0.011	0.001	0.048	0.124	0.003	5052.83
2045	Heavy Duty Trucks	LNG	Out-Gate	3,065	6	1.60	1.82	23.64	18.91	3029	0.007	0.007	0.000	0.000	0.000	0.000	0.007	0.007	0.000	0.029	0.074	0.002	3031.70
2045	Heavy Duty Trucks	LNG	On-terminal	3,065	24	6.40	7.29	94.58	75.64	12118	0.027	0.026	0.000	0.000	0.000	0.000	0.027	0.026	0.001	0.116	0.297	0.006	12126.78

Table B1-503. On-road Fugitive Dust Parameters and Emission Factors - all years

Roadtype	sL (g/m2) [1]	Vehicle Weight (tons)	Vehicle Weight Reference	PM10 Multiplier (g/vmt) [1]	PM2.5 Multiplier (g/vmt) [1]	PM10 EF (g/mile) [1]	PM2.5 EF (g/mile) [1]
Freeways	0.0200	2.4	[1]	1	0.15	0.069	0.010
Major	0.0130	2.4	[1]	1	0.15	0.047	0.007
Collector	0.0130	2.4	[1]	1	0.15	0.047	0.007
Local	0.1350	2.4	[1]	1	0.15	0.395	0.059
Onsite	0.1350	18.9	[2]	1	0.15	3.240	0.486

Sources:

[1] http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2014.pdf

[2] From John C.: Based on Trinity Report Table 19-1

$$E = k\ (sL)^{0.91} \times (W)^{1.02} \qquad (1)$$

where: E = particulate emission factor (having units matching the units of k),
k = particle size multiplier for particle size range and units of interest (see below),
sL = road surface silt loading (grams per square meter) (g/m^2), and
W = average weight (tons) of the vehicles traveling the road.

2008 On-terminal Truck Road Dust Emissions

Table B1-504. Annual Emissions 2008 Actual Baseline

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2008	HDT	239,076	0.85	0.13	3.24	0.49

Table B1-505. Peak Day Emissions 2008 Actual Baseline

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2008	HDT	0.00427	7.29	1.09

Table B1-506. 8 hr Emissions 2008 Actual Baseline

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2008	HDT	0.61939	4.52	0.68

Table B1-507. 1 hr Emissions 2008 Actual Baseline

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2008	HDT	0.08860	0.65	0.10

Table B1-508. Emissions Broken Down by Fuel Type 2008 Actual Baseline

Year	Source	Fuel	Period	PM 10	PM25	Unit
2008	HDT	Diesel	Annual	0.85	0.13	tons/year
2008	HDT	LNG	Annual	0.00	0.00	tons/year
2008	HDT	Diesel	Day	7.29	1.09	lbs/day
2008	HDT	LNG	Day	0.00	0.00	lbs/day
2008	HDT	Diesel	8 hr	4.52	0.68	lbs/8hr
2008	HDT	LNG	8 hr	0.00	0.00	lbs/8hr
2008	HDT	Diesel	1 hr	0.65	0.10	lbs/hr
2008	HDT	LNG	1hr	0.00	0.00	lbs/hr

2012 On-terminal Truck Road Dust Emissions

Table B1-509. Annual Emissions 2012 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2012	HDT	368,474	1.32	0.20	3.24	0.49

Table B1-510. Peak Day Emissions 2012 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2012	HDT	0.00399	10.51	1.58

Table B1-511. 8 hr Emissions 2012 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2012	HDT	0.49168	5.17	0.78

Table B1-512. 1 hr Emissions 2012 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2012	HDT	0.07026	0.74	0.11

Table B1-513. Emissions Broken Down by Fuel Rype 2012 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2012	HDT	Diesel	Annual	1.18	0.18	tons/year
2012	HDT	LNG	Annual	0.13	0.02	tons/year
2012	HDT	Diesel	Day	9.46	1.42	lbs/day
2012	HDT	LNG	Day	1.05	0.16	lbs/day
2012	HDT	Diesel	8 hr	4.65	0.70	lbs/8hr
2012	HDT	LNG	8 hr	0.52	0.08	lbs/8hr
2012	HDT	Diesel	1 hr	0.66	0.10	lbs/hr
2012	HDT	LNG	1hr	0.07	0.01	lbs/hr

2014 On-terminal Truck Road Dust Emissions

Table B1-514. Annual Road Dust Emissions 2014 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2014	HDT	832,405	2.97	0.45	3.24	0.49

Table B1-515. Peak Day Road Dust Emissions 2014 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2014	HDT	0.00416	24.73	3.71

Table B1-516. 8 hr Road Dust Emissions 2014 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr	PM10	PM2.5
2014	HDT	0.48962	12.11	1.82

Table B1-517. 1 hr Road Dust Emissions 2014 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2014	HDT	0.07041	1.74	0.26

Table B1-518. Road Dust Emissions Broken Down by FuelType 2014 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2014	HDT	Diesel	Annual	2.73	0.41	tons/year
2014	HDT	LNG	Annual	0.24	0.04	tons/year
2014	HDT	Diesel	Day	22.70	3.41	lbs/day
2014	HDT	LNG	Day	2.03	0.30	lbs/day
2014	HDT	Diesel	8 hr	11.11	1.67	lbs/8hr
2014	HDT	LNG	8 hr	0.99	0.15	lbs/8hr
2014	HDT	Diesel	1 hr	1.60	0.24	lbs/hr
2014	HDT	LNG	1hr	0.14	0.02	lbs/hr

2018 On-terminal Truck Road Dust Emissions

Table B1-519. Annual Emissions 2018 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2018	HDT	788,019	2.81	0.42	3.24	0.49

Table B1-520. Peak Day Emissions 2018 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2018	HDT	0.00423	23.79	3.57

Table B1-521. 8 hr Emissions 2018 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2018	HDT	0.49309	11.73	1.76

Table B1-522. 1 hr Emissions 2018 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2018	HDT	0.07087	1.69	0.25

Table B1-523. Emissions Broken Down by Fuel Type 2018 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2018	HDT	Diesel	Annual	0.00	0.00	tons/year
2018	HDT	LNG	Annual	2.81	0.42	tons/year
2018	HDT	Diesel	Day	0.00	0.00	lbs/day
2018	HDT	LNG	Day	23.79	3.57	lbs/day
2018	HDT	Diesel	8 hr	0.00	0.00	lbs/8hr
2018	HDT	LNG	8 hr	11.73	1.76	lbs/8hr
2018	HDT	Diesel	1 hr	0.00	0.00	lbs/hr
2018	HDT	LNG	1hr	1.69	0.25	lbs/hr

Future Year On-terminal Truck Road Dust Emissions

Table B1-524. Annual Road Dust Emissions 2023 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2023	HDT	1,011,285	3.61	0.54	3.24	0.49

Table B1-525. Peak Day Road Dust Emissions 2023 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2023	HDT	0.00405	29.25	4.39

Table B1-526. 8 hr Road Dust Emissions 2023 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2023	HDT	0.52972	15.50	2.33

Table B1-527. 1 hr Road Dust Emissions 2023 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2023	HDT	0.07369	2.16	0.32

Table B1-528. Road Dust Emissions Broken Down by Fuel Type 2023 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2023	HDT	Diesel	Annual	3.32	0.50	tons/year
2023	HDT	LNG	Annual	0.30	0.04	tons/year
2023	HDT	Diesel	Day	26.86	4.03	lbs/day
2023	HDT	LNG	Day	2.40	0.36	lbs/day
2023	HDT	Diesel	8 hr	14.23	2.13	lbs/8hr
2023	HDT	LNG	8 hr	1.27	0.19	lbs/8hr
2023	HDT	Diesel	1 hr	1.98	0.30	lbs/hr
2023	HDT	LNG	1hr	0.18	0.03	lbs/hr

Future Year On-terminal Truck Road Dust Emissions

Table B1-529. Annual Road Dust Emissions 2030 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2030	HDT	1,126,363	4.02	0.60	3.24	0.49

Table B1-530. Peak Day Road Dust Emissions 2030 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2030	HDT	0.00405	32.58	4.89

Table B1-531. 8 hr Road Dust Emissions 2030 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr	PM10	PM2.5
2030	HDT	0.52972	17.26	2.59

Table B1-532. 1 hr Road Dust Emissions 2030 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2030	HDT	0.07369	2.40	0.36

Table B1-533. Road Dust Emissions broken down by Fuel Type 2030 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2030	HDT	Diesel	Annual	3.69	0.55	tons/year
2030	HDT	LNG	Annual	0.33	0.05	tons/year
2030	HDT	Diesel	Day	29.91	4.49	lbs/day
2030	HDT	LNG	Day	2.67	0.40	lbs/day
2030	HDT	Diesel	8 hr	15.84	2.38	lbs/8hr
2030	HDT	LNG	8 hr	1.42	0.21	lbs/8hr
2030	HDT	Diesel	1 hr	2.20	0.33	lbs/hr
2030	HDT	LNG	1hr	0.20	0.03	lbs/hr

Future Year On-terminal Truck Road Dust Emissions

Table B1-534. Annual Road Dust Emissions 2036 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2036	HDT	1,134,170	4.05	0.61	3.24	0.49

Table B1-535. Peak Day Road Dust Emissions 2036 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2036	HDT	0.00405	32.81	4.92

Table B1-536. 8 h Roar Dust Emissions 2036 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr	PM10	PM2.5
2036	HDT	0.52972	17.38	2.61

Table B1-537. 1 hr Road Dust Emissions 2036 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2036	HDT	0.07369	2.42	0.36

Table B1-538. Road Dust Emissions Broken Down by Fuel Type 2036 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2036	HDT	Diesel	Annual	3.72	0.56	tons/year
2036	HDT	LNG	Annual	0.33	0.05	tons/year
2036	HDT	Diesel	Day	30.12	4.52	lbs/day
2036	HDT	LNG	Day	2.69	0.40	lbs/day
2036	HDT	Diesel	8 hr	15.95	2.39	lbs/8hr
2036	HDT	LNG	8 hr	1.43	0.21	lbs/8hr
2036	HDT	Diesel	1 hr	2.22	0.33	lbs/hr
2036	HDT	LNG	1hr	0.20	0.03	lbs/hr

Future Year On-terminal Truck Road Dust Emissions

Table B1-539. Annual Road Dust Emissions 2045 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2045	HDT	1,135,546	4.06	0.61	3.24	0.49

Table B1-540. Peak Day Road Dust Emissions 2045 Proposed Mitigated.

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2045	HDT	0.00405	32.85	4.93

Table B1-541. 8 hr Road Dust Emissions 2045 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr	PM10	PM2.5
2045	HDT	0.52972	17.40	2.61

Table B1-542. 1 hr Road Dust Emissions 2045 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2045	HDT	0.07369	2.42	0.36

Table B1-543. Road Dust Emissions Broken Down by Fuel Type 2045 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2045	HDT	Diesel	Annual	3.72	0.56	tons/year
2045	HDT	LNG	Annual	0.33	0.05	tons/year
2045	HDT	Diesel	Day	30.16	4.52	lbs/day
2045	HDT	LNG	Day	2.69	0.40	lbs/day
2045	HDT	Diesel	8 hr	15.97	2.40	lbs/8hr
2045	HDT	LNG	8 hr	1.43	0.21	lbs/8hr
2045	HDT	Diesel	1 hr	2.22	0.33	lbs/hr
2045	HDT	LNG	1hr	0.20	0.03	lbs/hr

Worker Vehicles
(Passenger Cars)

China Shipping Operations Data Needs

Analysis Year	2008

Table B-544. On-site Passenger Car activities in 2008 - Actual Baseline

Parameter	Values
Annual number visits	110,303
Average Idling Time (min / visit)	
At in-gate	0
At out-gate	0
On-terminal, not including at gate	0
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	0.6

2008 On-terminal PC Emissions

Table B1-545. Emission Factors 2008 Proposed Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	Passenger Cars	Agg	15	0.26	0.35	5.00	0.41	545.58	0.01	0.01	0.01	0.04	0.00	0.02	0.05	0.03	0	0.01	0.05	0.03	555.11
				Start Exhaust Emission Factors (g/trip)																	
2008	Passenger Cars	Agg	start exh	0.85	0.93	3.90	0.53	74.77	0.00	0.00	0.00	0.00	0.00	0.00	0.005	0.004	0.00	0.00	0.15	0.04	91.32

Table B1-546. Annual Running Emissions 2008 Proposed Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	PC	Agg	0.6	110,303	0.02	0.03	0.36	0.03	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.50

Table B1-547. Peak Day Running Emissions 2008 Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	PC	Agg	0.00427	0.16	0.22	3.11	0.26	340	0.01	0.01	0.00	0.02	0.00	0.01	0.03	0.02	0.00	0.00	0.03	0.02	345.85

Table B1-548. Annual Start Emissions 2008 Proposed Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	Passenger Cars	Agg	In-Gate	110,303	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Passenger Cars	Agg	Out-Gate	110,303	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Passenger Cars	Agg	On-terminal	110,303	0	0.10	0.11	0.47	0.06	9.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	11.10

Table B1-549. Peak Day Start 2008 Proposed Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2008	Passenger Cars	Agg	In-Gate	471	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Passenger Cars	Agg	Out-Gate	471	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2008	Passenger Cars	Agg	On-terminal	471	0	0.88	0.96	4.05	0.55	77.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.04	94.83

China Shipping Operations Data Needs

Analysis Year	2012

Table B1-550. On-site Passenger Car Activities in 2012 - Proposed Mitigated

Parameter	Values
Annual number visits	117,946
Average Idling Time (min / visit)	
At in-gate	0
At out-gate	0
On-terminal, not including at gate	0
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	0.6

2012 On-terminal PC Emissions

Table B1-551. Emission Factors 2012 Proposed Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	Passenger Cars	Gas	15	0.17	0.23	3.46	0.27	523.29	0.01	0.01	0.01	0.04	0.00	0.02	0.05	0.02	0	0.01	0.03	0.02	529.86
				Start Exhaust Emission Factors (g/trip)																	
2012	Passenger Cars	Gas	start exh	0.64	0.71	3.16	0.41	70.09	0.00	0.00	0.00	0.00	0.00	0.00	0.003	0.003	0.00	0.00	0.12	0.04	84.23

Table B1-552. Annual Running Emissions 2012 Proposed Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	PC	Gas	0.6	117,946	0.01	0.02	0.27	0.02	41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.33

Table B1-553. Peak Day Running Emissions 2012 Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	PC	Gas	0.00399	0.10	0.15	2.16	0.17	326	0.00	0.00	0.00	0.02	0.00	0.01	0.03	0.01	0.00	0.00	0.02	0.01	330.12

Table B1-554. Annual Start Emissions 2012 Proposed Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	Passenger Cars	Gas	In-Gate	117,946	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2012	Passenger Cars	Gas	Out-Gate	117,946	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2012	Passenger Cars	Gas	On-terminal	117,946	0	0.08	0.09	0.41	0.05	9.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	10.95

Table B1-555. Peak Day Start 2012 Proposed Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2012	Passenger Cars	Gas	In-Gate	471	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2012	Passenger Cars	Gas	Out-Gate	471	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2012	Passenger Cars	Gas	On-terminal	471	0	0.67	0.73	3.28	0.42	72.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.04	87.46

China Shipping Operations Data Needs

Analysis Year	2014

Table B1-556. On-site Passenger Car Activities 2014 - Proposed Mitigated

Parameter	Values
Annual number of visits	113,276
Average Idling Time (min / truck trip)	
At in-gate	0
At out-gate	0
On-terminal, not including at gate	0
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/trip)	0.6

2014 On-terminal PC Emissions

Table B1-557. Emission Factors 2014 Proposed Mitigated

			Running Emission Factors (g/mile)																	
Year	Source	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10brea	PM2.5tire	PM2.5brea	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	Passenger Cars	15	0.12	0.17	2.64	0.19	499.42	0.005	0.005	0.01	0.04	0.00	0.02	0.05	0.02	0	0.005	0.03	0.01	504.46
			Start Exhaust Emission Factors (g/trip)																	
2014	Passenger Cars	start exh	0.52	0.57	2.85	0.34	66.37	0.003	0.002	0	0	0	0	0.003	0.002	0	0.001	0.10	0.03	79.11

Table B1-558. Annual Running Emissions 2014 Proposed Mitigated

				Annual Emissions (tons/year)																	
Year	Source	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	PC	0.6	113,276	0.01	0.01	0.20	0.01	37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.79

Table B1-559. Peak D ay Running Emissions 2014 Proposed Mitigated

		Peak Day	Peak Day Emissions (lb/day)																	
Year	Source	Factor	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	PC	0.00416	0.08	0.11	1.65	0.12	311	0.00	0.00	0.00	0.02	0.00	0.01	0.03	0.01	0.00	0.00	0.02	0.01	314.29

Table B1-560. Annual Start Emissions 2014 Proposed Mitigated

		Activity			Annual Emissions (tons/year)																
Year	Source	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	Passenger Cars	In-Gate	113,276	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2014	Passenger Cars	Out-Gate	113,276	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2014	Passenger Cars	On-terminal	113,276	0	0.07	0.07	0.36	0.04	8.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	9.88

Table B1-561. Peak Day Start 2014 Proposed Mitigated

		Activity			Peak Day Emissions (lb/day)																
Year	Source	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2014	Passsenger Cars	In-Gate	471	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2014	Passsenger Cars	Out-Gate	471	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2014	Passsenger Cars	On-terminal	471	0	0.54	0.59	2.96	0.35	68.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.04	82.15

China Shipping Operations Data Needs

Analysis Year	2018

Table B1-562. On-site Passenger Car activities in 2018 - Proposed Mitigated

Parameter	Values
Annual number visits	227,577
Average Idling Time (min / visit)	
At in-gate	0
At out-gate	0
On-terminal, not including at gate	0
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/visit)	0.6

2018 On-terminal PC Emissions

Table B1-563. Emission Factors 2018 Proposed Mitigated

				Running Emission Factors (g/mile)																	
Year	Source	Fuel	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10break	PM2.5tire	PM2.5break	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	Passenger Cars	Gas	15	0.05	0.08	1.51	0.10	461.97	0.00	0.00	0.01	0.04	0.00	0.02	0.05	0.02	0	0.00	0.01	0.01	464.94
				Start Exhaust Emission Factors (g/trip)																	
2018	Passenger Cars	Gas	start exh	0.33	0.37	2.41	0.24	60.61	0.00	0.00	0.00	0.00	0.00	0.00	0.002	0.002	0.00	0.00	0.07	0.03	71.20

Table B1-564. Annual Running Emissions 2018 Proposed Mitigated

					Annual Emissions (tons/year)																	
Year	Source	Fuel	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	PC	Gas	0.6	227,577	0.01	0.01	0.23	0.01	70	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	69.98

Table B1-565. Peak Day Running Emissions 2018 Proposed Mitigated

			Peak Day Factor	Peak Day Emissions (lb/day)																	
Year	Source	Fuel	(annual to peak)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	PC	Gas	0.00423	0.07	0.10	1.92	0.12	588	0.01	0.01	0.01	0.05	0.00	0.02	0.06	0.03	0.00	0.01	0.02	0.01	591.58

Table B1-566. Annual Start Emissions 2018 Proposed Mitigated

			Activity			Annual Emissions (tons/year)																
Year	Source	Fuel	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	Passenger Cars	Gas	In-Gate	227,577	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2018	Passenger Cars	Gas	Out-Gate	227,577	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2018	Passenger Cars	Gas	On-terminal	227,577	0	0.08	0.09	0.60	0.06	15.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	17.86

Table B1-567. Peak Day Start 2018 Proposed Mitigated

			Activity			Peak Day Emissions (lb/day)																
Year	Source	Fuel	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2018	Passenger Cars	Gas	In-Gate	962	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2018	Passenger Cars	Gas	Out-Gate	962	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2018	Passenger Cars	Gas	On-terminal	962	0	0.71	0.78	5.11	0.52	128.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.06	150.99

China Shipping Operations Data Needs

Analysis Year	2023

Table B1-568. On-site Passenger Car Activities 2023 Proposed Mitigated

Parameter	Values
Annual number of one-way trips*	287,091
Average Idling Time (min / PC trip)	
At in-gate	0
At out-gate	0
On-terminal, not including at gate	0
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/trip)	0.6

2023 On-terminal PC Emissions

Table B1-569. Emission Factors 2023 Proposed Mitigated

			Running Emission Factors (g/mile)																	
Year	Source	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10breal	PM2.5tire	PM2.5breal	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	Passenger Cars	15	0.02	0.03	0.94	0.05	406.54	0.004	0.004	0.01	0.04	0.00	0.02	0.05	0.02	0	0.004	0.01	0.01	408.37
			Start Exhaust Emission Factors (g/trip)																	
2023	Passenger Cars	start exh	0.21	0.23	2.09	0.17	53.28	0.002	0.002	0	0	0	0	0.002	0.002	0	0.001	0.05	0.02	61.82

Table B1-570. Annual Running Emissions 2023 Proposed Mitigated

				Annual Emissions (tons/year)																	
Year	Source	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
=B8	PC	0.6	287,091	0.00	0.01	0.18	0.01	77	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	77.54

Table B1-571. Peak Day Running Emissions 2 023

Proposed Mitigated

			Peak Day	Peak Day Emissions (lb/day)																	
Year	Source		Factor (annual	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	PC		0.00405	0.04	0.05	1.45	0.07	625	0.01	0.01	0.01	0.06	0.00	0.02	0.07	0.03	0.00	0.01	0.01	0.01	627.98

Table B1-572. Annual Start Emissions 2023 Proposed Mitigated

		Activity			Annual Emissions (tons/year)																
Year	Source	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2023	Passenger Cars	In-Gate	287,091	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2023	Passenger Cars	Out-Gate	287,091	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2023	Passenger Cars	On-terminal	287,091	0	0.07	0.07	0.66	0.06	16.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	19.56

Table B1-573. Peak Day Start 2023 Proposed Mitigated

		Activity			Peak Day Emissions (lb/day)																	
Year	Source	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
=A21	Passsenger Cars	In-Gate	1,163	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2023	Passsenger Cars	Out-Gate	1,163	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2023	Passsenger Cars	On-terminal	1,163	0	0.53	0.58	5.36	0.45	136.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.06	158.43

China Shipping Operations Data Needs

Analysis Year	2030

Table B1-574. On-site Passenger Car Activities 2030 Proposed Mitigated

Parameter	Values
Annual number of one-way trips*	315,800
Average Idling Time (min / PC trip)	
At in-gate	0
At out-gate	0
On-terminal, not including at gate	0
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/trip)	0.6

2030 On-terminal PC Emissions

Table B1-575. Emission Factors 2030 Proposed Mitigated

			Running Emission Factors (g/mile)																
Year	Source	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10breal	PM2.5tire	PM2.5breal	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	Passenger Cars	15	0.01	0.02	0.69	0.03	342.40	0.003	0.003	0.01	0.04	0.00	0.02	0.05	0.02	0	0.003	0.00	0.00	343.74
			Start Exhaust Emission Factors (g/trip)																	
2030	Passenger Cars	start exh	0.12	0.13	1.66	0.13	44.63	0.001	0.001	0	0	0	0	0.001	0.001	0	0.000	0.03	0.02	51.26

Table B1-576. Annual Running Emissions 2030 Proposed Mitigated

				Annual Emissions (tons/year)																
Year	Source	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	PC	0.6	315,800	0.00	0.00	0.14	0.01	72	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	71.80

Table B1-577. Peak Day Running Emissions 2030 Proposed Mitigated

			Peak Day	Peak Day Emissions (lb/day)																
Year	Source	Factor (annual	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	PC	0.00405	0.02	0.03	1.17	0.05	579	0.00	0.00	0.01	0.06	0.00	0.03	0.08	0.03	0.00	0.01	0.01	0.01	581.45

Table B1-578. Annual Start Emissions 2030 Proposed Mitigated

		Activity			Annual Emissions (tons/year)																
Year	Source	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	Passenger Cars	In-Gate	315,800	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2030	Passenger Cars	Out-Gate	315,800	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2030	Passenger Cars	On-terminal	315,800	0	0.04	0.05	0.58	0.04	15.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	17.85

Table B1-579. Peak Day Start 2030 Proposed Mitigated

		Activity			Peak Day Emissions (lb/day)																
Year	Source	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2030	Passsenger Cars	In-Gate	1,279	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2030	Passsenger Cars	Out-Gate	1,279	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2030	Passsenger Cars	On-terminal	1,279	0	0.34	0.37	4.68	0.36	125.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.06	144.52

China Shipping Operations Data Needs

Analysis Year	2036

Table B1-580. On-site Passenger Car Activities 2036 Proposed Mitigated

Parameter	Values
Annual number of visits	313,484
Average Idling Time (min / PC trip)	
At in-gate	0
At out-gate	0
On-terminal, not including at gate	0
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/trip)	0.6

2036 On-terminal PC Emissions

Table B1-581. Emission Factors 2036 Proposed Mitigated

			Running Emission Factors (g/mile)																
Year	Source	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10breal	PM2.5tire	PM2.5breal	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	Passenger Cars	15	0.01	0.01	0.62	0.02	317.53	0.002	0.002	0.01	0.04	0.00	0.02	0.05	0.02	0	0.003	0.00	0.00	318.77
			Start Exhaust Emission Factors (g/trip)																	
2036	Passenger Cars	start exh	0.08	0.09	1.47	0.11	40.83	0.001	0.001	0	0	0	0	0.001	0.001	0	0.000	0.02	0.02	46.90

Table B1-582. Annual Running Emissions 2036 Proposed Mitigated

				Annual Emissions (tons/year)																	
Year	Source	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	PC	0.6	313,484	0.00	0.00	0.13	0.00	66	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	66.09

Table B1-583. Peak Day Running Emissions 2036 Proposed Mitigated

			Peak Day	Peak Day Emissions (lb/day)																	
Year	Source	Factor (annual	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	PC	0.00405	0.01	0.02	1.04	0.04	533	0.00	0.00	0.01	0.06	0.00	0.03	0.08	0.03	0.00	0.01	0.00	0.01	535.25

Table B1-584. Annual Start Emissions 2036 Proposed Mitigated

		Activity			Annual Emissions (tons/year)																
Year	Source	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	Passenger Cars	In-Gate	313,484	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2036	Passenger Cars	Out-Gate	313,484	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2036	Passenger Cars	On-terminal	313,484	0	0.03	0.03	0.51	0.04	14.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	16.21

Table B1-585. Peak Day Start 2036 Proposed Mitigated

		Activity			Peak Day Emissions (lb/day)																	
Year	Source	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2036	Passsenger Cars	In-Gate	1,269	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2036	Passsenger Cars	Out-Gate	1,269	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2036	Passsenger Cars	On-terminal	1,269	0	0.24	0.26	4.12	0.32	114.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.05	131.26

China Shipping Operations Data Needs

Analysis Year	2045

Table B1-586. On-site Passenger Car Activities 2045 Proposed Mitigated

Parameter	Values
Annual number of visits	319,041
Average Idling Time (min / PC trip)	
At in-gate	0
At out-gate	0
On-terminal, not including at gate	0
Average On-site Drive	
On-terminal average speed (mph)	15
On-terminal driving distance (mi/trip)	0.6

2045 On-terminal PC Emissions

Table B1-587. Emission Factors 2045 Proposed Mitigated

			Running Emission Factors (g/mile)																
Year	Source	Average speed bin (mph)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10tire	PM10breal	PM2.5tire	PM2.5breal	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	Passenger Cars	15	0.005	0.01	0.58	0.02	306.42	0.001	0.001	0.01	0.04	0.00	0.02	0.05	0.02	0	0.003	0.00	0.00	307.62
			Start Exhaust Emission Factors (g/trip)																	
2045	Passenger Cars	start exh	0.06	0.07	1.35	0.11	38.79	0.001	0.001	0	0	0	0	0.001	0.001	0	0.000	0.02	0.02	44.69

Table B1-588. Annual Running Emissions 2045 Proposed Mitigated

				Annual Emissions (tons/year)																
Year	Source	On-terminal distance (miles/visit)	No. of visits per year	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	PC	0.6	319,041	0.00	0.00	0.12	0.00	65	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	64.91

Table B1-589. Peak Day Running Emissions 2045 Proposed Mitigated

			Peak Day	Peak Day Emissions (lb/day)																
Year	Source	Factor (annual	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	PC	0.00405	0.01	0.01	1.00	0.04	524	0.00	0.00	0.01	0.06	0.00	0.03	0.08	0.03	0.00	0.01	0.00	0.01	525.69

Table B1-590. Annual Start Emissions 2045 Proposed Mitigated

		Activity			Annual Emissions (tons/year)																
Year	Source	Location	No. of visits per year	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	Passenger Cars	In-Gate	319,041	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2045	Passenger Cars	Out-Gate	319,041	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2045	Passenger Cars	On-terminal	319,041	0	0.02	0.02	0.48	0.04	13.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	15.72

Table B1-591. Peak Day Start 2045 Proposed Mitigated

		Activity			Peak Day Emissions (lb/day)																
Year	Source	Location	Peak day visits	Idling time (min/visit)	VOC	TOG	CO	NOx	CO2	PM10	PM2.5	PM10TW	PM10BW	PM2.5TW	PM2.5BW	PM10 Total	PM2.5 Total	DPM	SOx	CH4	N2O	CO2e
2045	Passsenger Cars	In-Gate	1,292	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2045	Passsenger Cars	Out-Gate	1,292	0	0.00	0.00	0.00	0.00	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
2045	Passsenger Cars	On-terminal	1,292	0	0.18	0.20	3.85	0.32	110.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	127.30

Table B1-592. Fugitive Dust Parameters and Emission Factors

Roadtype	sL (g/m2) [1]	Vehicle Weight (tons)	Vehicle Weight Reference	PM10 Multiplier (g/vmt) [1]	PM2.5 Multiplier (g/vmt) [1]	PM10 EF (g/mile) [1]	PM2.5 EF (g/mile) [1]
Freeways	0.0200	2.4	[1]	1	0.15	0.069	0.010
Major	0.0130	2.4	[1]	1	0.15	0.047	0.007
Collector	0.0130	2.4	[1]	1	0.15	0.047	0.007
Local	0.1350	2.4	[1]	1	0.15	0.395	0.059
Onsite	0.1350	2.4	[2]	1	0.15	0.395	0.059

Sources:

[1] http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2014.pdf

[2] From John C.: Based on Trinity Report Table 19-1

$$E = k\ (sL)^{0.91} \times (W)^{1.02} \qquad (1)$$

where: E = particulate emission factor (having units matching the units of k),
k = particle size multiplier for particle size range and units of interest (see below),
sL = road surface silt loading (grams per square meter) (g/m^2), and
W = average weight (tons) of the vehicles traveling the road.

2008 On-terminal PC Fugitive Dust Emissions

Table B1-593. Annual Road Dust Emissions 2008 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2008	PC	66,182	0.03	0.00	0.39	0.06

Table B1-594. Peak Day Emissions 2008 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2008	PC	0.00427	0.25	0.04

Table B1-595. 8 hr Emissions 2008 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2008	PC	0.61939	0.15	0.02

Table B1-596. 1 hr Emissions 2008 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2008	PC	0.08860	0.02	0.00

Table B1-597. Emissions Broken Down by Fuel Type 2008 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2008	PC	Aggregate	Annual	0.03	0.00	tons/year
2008	PC	Aggregate	Day	0.25	0.04	lbs/day
2008	PC	Aggregate	8 hr	0.15	0.02	lbs/8hr
2008	PC	Aggregate	1 hr	0.02	0.00	lbs/hr

2012 On-terminal PC Fugitive Dust Emissions

Table B1-598. Annual Emissions 2012 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2012	PC	70,768	0.03	0.00	0.39	0.06

Table B1-599. Peak Day Emissions 2012 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2012	PC	0.00399	0.25	0.04

Table B1-600. 8 hr Emissions 2012 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2012	PC	0.49168	0.12	0.02

Table B1-601. 1 hr Emissions 2012 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2012	PC	0.07026	0.02	0.00

Table B1-602. Emissions Broken Down by Fuel Type 2012 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2012	PC	Aggregate	Annual	0.03	0.00	tons/year
2012	PC	Aggregate	Day	0.25	0.04	lbs/day
2012	PC	Aggregate	8 hr	0.12	0.02	lbs/8hr
2012	PC	Aggregate	1 hr	0.02	0.00	lbs/hr

2014 On-terminal PC Fugitive Dust Emissions

Table B1-603. Annual Emissions 2014 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2014	PC	67,965	0.03	0.00	0.39	0.06

Table B1-604. Peak Day Emissions 2014 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2014	PC	0.00416	0.25	0.04

Table B1-605. 8 hr Emissions 2014 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2014	PC	0.48962	0.12	0.02

Table B1-606. 1 hr Emissions 2014 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2014	PC	0.07369	0.02	0.00

Table B1-607. Emissions Broken Down by Fuel Type 2014 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2014	PC	Aggregate	Annual	0.03	0.00	tons/year
2014	PC	Aggregate	Day	0.25	0.04	lbs/day
2014	PC	Aggregate	8 hr	0.12	0.02	lbs/8hr
2014	PC	Aggregate	1 hr	0.02	0.00	lbs/hr

2018 On-terminal PC Fugitive Dust Emissions

Table B1-608. Annual Emissions 2018 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2018	PC	136,546	0.06	0.01	0.39	0.06

Table B1-609. Peak Day Emissions 2018 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2018	PC	0.00423	0.50	0.08

Table B1-610. 8 hr Emissions 2018 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2018	PC	0.49309	0.25	0.04

Table B1-611. 1 hr Emissions 2018 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2018	PC	0.07087	0.04	0.01

Table B1-612. Emissions Broken Down by Fuel Type 2018 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2018	PC	Aggregate	Annual	0.06	0.01	tons/year
2018	PC	Aggregate	Day	0.50	0.08	lbs/day
2018	PC	Aggregate	8 hr	0.25	0.04	lbs/8hr
2018	PC	Aggregate	1 hr	0.04	0.01	lbs/hr

Future Year On-terminal PC Fugitive Dust Emissions

Table B1-613. Annual Emissions 2023 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2023	PC	172,254	0.07	0.01	0.39	0.06

Table B1-614. Peak Day Emissions 2023 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2023	PC	0.00405	0.61	0.09

Table B1-615. 8 hr Emissions 2023 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2023	PC	0.52972	0.32	0.05

Table B1-616. 1 hr Emissions 2023 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2023	PC	0.07369	0.04	0.01

Table B1-617. Emissions Broken Down by Fuel Type 2023 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2023	PC	Aggregate	Annual	0.07	0.01	tons/year
2023	PC	Aggregate	Day	0.61	0.09	lbs/day
2023	PC	Aggregate	8 hr	0.32	0.05	lbs/8hr
2023	PC	Aggregate	1 hr	0.04	0.01	lbs/hr

Future Year On-terminal PC Fugitive Dust Emissions

Table B1-618. Annual Emissions 2030 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2030	PC	189,480	0.08	0.01	0.39	0.06

Table B1-619. Peak Day Emissions 2030 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2030	PC	0.00405	0.67	0.10

Table B1-620. 8 hr Emissions 2030 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr	PM10	PM2.5
2030	PC	0.52972	0.35	0.05

Table B1-621. 1 hr Emissions 2030 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2030	PC	0.07369	0.05	0.01

Table B1-622. Emissions Broken Down by Fuel Type 2030 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2030	PC	Aggregate	Annual	0.08	0.01	tons/year
2030	PC	Aggregate	Day	0.67	0.10	lbs/day
2030	PC	Aggregate	8 hr	0.35	0.05	lbs/8hr
2030	PC	Aggregate	1 hr	0.05	0.01	lbs/hr

Future Year On-terminal PC Fugitive Dust Emissions

Table B1-623. Annual Emissions 2036 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2036	PC	188,091	0.08	0.01	0.39	0.06

Table B1-624. Peak Day Emissions 2036 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2036	PC	0.00405	0.66	0.10

Table B1-625. 8 hr Emissions 2036 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2036	PC	0.52972	0.35	0.05

Table B1-626. 1 hr Emissions 2036 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2036	PC	0.07369	0.05	0.01

Table B1-627. Emissions Broken Down by Fuel Type 2036 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2036	PC	Aggregate	Annual	0.08	0.01	tons/year
2036	PC	Aggregate	Day	0.66	0.10	lbs/day
2036	PC	Aggregate	8 hr	0.35	0.05	lbs/8hr
2036	PC	Aggregate	1 hr	0.05	0.01	lbs/hr

Future Year On-terminal PC Fugitive Dust Emissions

Table B1-628. Annual Emissions 2045 Proposed Mitigated

			Annual Emissions (tons/year)		Emission factor (g/mile)	
Year	Source	Distance travelled per year (miles)	PM10	PM2.5	PM10	PM2.5
2045	PC	191,425	0.08	0.01	0.39	0.06

Table B1-629. Peak Day Emissions 2045 Proposed Mitigated

		Peak Day Factor	Peak Day Emissions (lb/day)	
Year	Source	(annual to peak)	PM10	PM2.5
2045	PC	0.00405	0.67	0.10

Table B1-630. 8 hr Emissions 2045 Proposed Mitigated

		Peak Factor	Peak 8hr Emissions (lb/8 hr)	
Year	Source	(day to 8hr peak)	PM10	PM2.5
2045	PC	0.52972	0.36	0.05

Table B1-631. 1 hr Emissions 2045 Proposed Mitigated

		Peak Factor	Peak 1 hr Emissions (lb/hr)	
Year	Source	(day to 1 hr	PM10	PM2.5
2045	PC	0.07369	0.05	0.01

Table B1-632. Emissions Broken Down by Fuel Type 2045 Proposed Mitigated

Year	Source	Fuel	Period	PM 10	PM25	Unit
2045	PC	Aggregate	Annual	0.08	0.01	tons/year
2045	PC	Aggregate	Day	0.67	0.10	lbs/day
2045	PC	Aggregate	8 hr	0.36	0.05	lbs/8hr
2045	PC	Aggregate	1 hr	0.05	0.01	lbs/hr

Harbor Craft/Tugs

Analysis Year	2008

Table B1-633. Manuevering Time Duration 2008

Transit zone	Hrs
Within breakwater	0.5
Shift (anchorage to berth)	0.3

Table B1-634. Tug Characteristics 2008

Tug	Fleetwide Average MY	# of Engines	HP per Engine	Hours/Year	Load Factor
Average Tug Main	1995	2.0	1951	1327	0.31
Average Tug Auxiliary	1999	2.0	138	1178	0.43

Table B1-635. Tug Engine Composite Emission Factors 2008

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.50	0.46	0.50	11.69	0.01	3.16	0.77	486.19	0.02	0.01
Auxiliary	0.38	0.35	0.38	7.74	0.01	3.93	0.83	486.08	0.02	0.01

Analysis Year	2012

Table B1-636. Manuevering Time Duration 2012

Transit zone	Hrs
Within breakwater	0.5
Shift (anchorage to berth)	0.3

Table B1-637. Tug Characteristics 2012

Tug	Fleetwide Average MY	# of Engines	HP per Engine	Hours/Year	Load Factor
Average Tug Main	2005	2.2	2069	1480	0.31
Average Tug Auxiliary	2008	2.0	187	1743	0.43

Table B1-638. Tug Engine Composite Emission Factors 2012

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.24	0.22	0.24	6.59	0.01	3.69	0.57	486.28	0.02	0.01
Auxiliary	0.17	0.16	0.17	5.10	0.01	3.84	0.63	486.46	0.02	0.01

Analysis Year	2014

Table B1-639. Tug Characteristics 2014

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2003	2	1908	0.31
Average Tug Auxiliary	2007	2	182	0.43

Table B1-640. Tug Engine Composite Emission Factors 2014

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.26	0.24	0.26	7.02	0.01	3.74	0.60	486.19	0.02	0.01
Auxiliary	0.16	0.14	0.16	4.95	0.01	3.92	0.64	486.19	0.02	0.01

Table B1-641. Manuevering Time Duration 2014

Transit zone	Hrs
Within breakwater	0.5
Precautionary zone	0.0
Shift (anchorage to berth)	0.3

Analysis Year	2018

Table B1-642. Manuevering Time Duration 2008

Transit zone	Hrs
Within breakwater	0.5
Shift (anchorage to berth)	0.3

Table B1-643. Tug Characteristics 2018

Tug	Fleetwide Average MY	# of Engines	HP per Engine	Hours/Year	Load Factor
Average Tug Main	2016	2.2	2069	1480	0.31
Average Tug Auxiliary	2007	2.0	187	1743	0.43

Table B1-644. Tug Engine Composite Emission Factors 2018

Tug Engine	2018 Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.03	0.03	0.03	1.26	0.01	3.82	0.13	486.28	0.02	0.01
Auxiliary	0.15	0.14	0.15	5.16	0.01	4.02	0.63	486.46	0.02	0.01

Analysis Year	2023

Table B1-645. Tug Characteristics 2023

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2016	2	1908	0.31
Average Tug Auxiliary	2020	2	182	0.43

Table B1-646. Tug Engine Composite Emission Factors 2023

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.03127	0.0288	0.0313	1.3187	0.0051	4.0408	0.1389	486.1939	0.0219	0.0099
Auxiliary	0.07207	0.0663	0.0721	3.8516	0.0051	3.8078	0.5730	486.1939	0.0219	0.0119

Table B1-647. Manuevering Time Duration 2023

Transit zone	Hrs
Precautionary zone	0.0
Within breakwater	0.5
Shift (anchorage to berth)	0.3

Analysis Year	2030

Table B1-648. Tug Characteristics 2030

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2016	2	1908	0.31
Average Tug Auxiliary	2020	2	182	0.43

Table B1-649. Tug Engine Composite Emission Factors 2030

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.04	0.03	0.04	1.40	0.01	4.35	0.16	486.19	0.02	0.01
Auxiliary	0.08	0.07	0.08	4.01	0.01	3.99	0.62	486.19	0.02	0.01

Table B1-650. Manuevering Time Duration 2030

Transit zone	Hrs
Precautionary zone	0.0
Within breakwater	0.5
Shift (anchorage to berth)	0.3

Analysis Year	2036

Table B1-651. Tug Characteristics 2036

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2016	2	1908	0.31
Average Tug Auxiliary	2020	2	182	0.43

Table B1-652. Tug Engine Composite Emission Factors 2036

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.04	0.04	0.04	1.48	0.01	4.62	0.17	486.19	0.02	0.01
Auxiliary	0.09	0.08	0.09	4.15	0.01	4.15	0.66	486.19	0.02	0.01

Table B1-653. Manuevering Time Duration 2036

Transit zone	Hrs
Precautionary zone	0.0
Within breakwater	0.5
Shift (anchorage to berth)	0.3

Analysis Year	2045

Table B1-654. Tug Characteristics 2045

Tug	MY	# of Engines	HP per Engine	Load Factor
Average Tug Main	2037	2	1908	0.31
Average Tug Auxiliary	2043	2	182	0.43

Table B1-655. Tug Engine Composite Emission Factors 2045

Tug Engine	Composite EF (g/HP-hr)									
	PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Main	0.03	0.03	0.03	1.33	0.01	4.09	0.14	486.19	0.02	0.01
Auxiliary	0.07	0.07	0.07	3.83	0.01	3.78	0.57	486.19	0.02	0.01

Table B1-656. Manuevering Time Duration 2045

Transit zone	Hrs
Precautionary zone	0.0
Within breakwater	0.5
Shift (anchorage to berth)	0.3

Table B1-657. Harbor Craft Annual Emissions Summary - All Scenarios

Ship category	Transits	Tons per year									
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Base Year 2008											
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	4	0.00	0.00	0.00	0.09	0.00	0.03	0.01	3.84	0.00	0.00
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	28	0.02	0.02	0.02	0.56	0.00	0.16	0.04	24.18	0.00	0.00
Containerships 4,000 - 5,000 TEU	18	0.02	0.02	0.02	0.38	0.00	0.11	0.03	16.32	0.00	0.00
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	1	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.86	0.00	0.00
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	51	0.05	0.04	0.05	1.05	0.00	0.30	0.07	45.21	0.00	0.00
Project Year 2012											
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	42	0.02	0.02	0.02	0.58	0.00	0.34	0.05	44.12	0.00	0.00
Containerships 8,000 - 9,000 TEU	9	0.00	0.00	0.00	0.12	0.00	0.07	0.01	9.26	0.00	0.00
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	51	0.03	0.02	0.03	0.71	0.00	0.41	0.06	53.38	0.00	0.00
Project Year 2014											
Containerships 10,000 - 11,000 TEU	63	0.03	0.03	0.03	0.80	0.00	0.45	0.07	57.60	0.00	0.00
Containerships 9,000 - 10,000 TEU	14	0.01	0.01	0.01	0.18	0.00	0.10	0.02	12.97	0.00	0.00
Containerships 8,000 - 9,000 TEU	67	0.03	0.03	0.03	0.85	0.00	0.47	0.08	60.69	0.00	0.00
Containerships 6,000 - 7,000 TEU	17	0.01	0.01	0.01	0.21	0.00	0.11	0.02	14.81	0.00	0.00
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	2	0.00	0.00	0.00	0.02	0.00	0.01	0.00	1.74	0.00	0.00
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	163	0.08	0.07	0.08	2.06	0.00	1.14	0.18	147.82	0.01	0.00
Project Year 2018											
Containerships 10,000 - 11,000 TEU	4	0.00	0.00	0.00	0.01	0.00	0.03	0.00	4.11	0.00	0.00
Containerships 9,000 - 10,000 TEU	4	0.00	0.00	0.00	0.01	0.00	0.03	0.00	4.11	0.00	0.00
Containerships 8,000 - 9,000 TEU	4	0.00	0.00	0.00	0.01	0.00	0.03	0.00	4.11	0.00	0.00
Containerships 6,000 - 7,000 TEU	40	0.00	0.00	0.00	0.14	0.00	0.32	0.01	41.15	0.00	0.00
Containerships 5,000 - 6,000 TEU	12	0.00	0.00	0.00	0.04	0.00	0.10	0.00	12.34	0.00	0.00
Containerships 4,000 - 5,000 TEU	108	0.01	0.01	0.01	0.39	0.00	0.90	0.04	113.40	0.01	0.00
Containerships 3,000 - 4,000 TEU	12	0.00	0.00	0.00	0.04	0.00	0.10	0.00	12.34	0.00	0.00
Containerships 2,000 - 3,000 TEU	96	0.01	0.01	0.01	0.34	0.00	0.78	0.04	99.22	0.00	0.00
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	280	0.02	0.02	0.02	0.99	0.00	2.30	0.11	290.79	0.01	0.01

Table B1-657. Harbor Craft Annual Emissions Summary - All Scenarios (continued)

Ship category	Transits	Tons per year									
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Project Year 2023											
Containerships 12,000 - 13,000 TEU	104	0.01	0.00	0.01	0.22	0.00	0.69	0.02	82.75	0.00	0.00
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	104	0.01	0.00	0.01	0.22	0.00	0.69	0.02	82.75	0.00	0.00
Containerships 7,000 - 8,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	104	0.01	0.00	0.01	0.22	0.00	0.69	0.02	82.75	0.00	0.00
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	312	0.02	0.01	0.02	0.67	0.00	2.06	0.07	248.25	0.01	0.01
Project Year 2030											
Containerships 12,000 - 13,000 TEU	104	0.01	0.01	0.01	0.33	0.00	0.83	0.04	93.70	0.00	0.00
Containerships 9,000 - 10,000 TEU	104	0.01	0.01	0.01	0.33	0.00	0.83	0.04	93.70	0.00	0.00
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	104	0.01	0.01	0.01	0.33	0.00	0.83	0.04	93.70	0.00	0.00
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	312	0.02	0.02	0.02	0.99	0.00	2.49	0.12	281.10	0.01	0.01
Project Year 2036											
Containerships 12,000 - 13,000 TEU	104	0.01	0.01	0.01	0.35	0.00	0.88	0.04	93.70	0.00	0.00
Containerships 9,000 - 10,000 TEU	104	0.01	0.01	0.01	0.35	0.00	0.88	0.04	93.70	0.00	0.00
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	104	0.01	0.01	0.01	0.35	0.00	0.88	0.04	93.70	0.00	0.00
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	312	0.03	0.03	0.03	1.04	0.00	2.64	0.13	281.10	0.01	0.01
Project Year 2045											
Containerships 12,000 - 13,000 TEU	104	0.01	0.01	0.01	0.31	0.00	0.78	0.04	93.70	0.00	0.00
Containerships 9,000 - 10,000 TEU	104	0.01	0.01	0.01	0.31	0.00	0.78	0.04	93.70	0.00	0.00
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	104	0.01	0.01	0.01	0.31	0.00	0.78	0.04	93.70	0.00	0.00
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	312	0.02	0.02	0.02	0.94	0.00	2.34	0.11	281.10	0.01	0.01

Table B1-658. Harbor Craft Peak Daily Emissions Summary - All Scenarios

Ship category	Transits	Lbs per day									
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Base Year 2008											
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	1	1.74	1.60	1.74	40.27	0.02	11.47	2.75	1,727.46	0.08	0.04
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	1	1.74	1.60	1.74	40.27	0.02	11.47	2.75	1,727.46	0.08	0.04
Project Year 2012											
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	1	0.98	0.90	0.98	27.26	0.02	15.68	2.42	2,057.40	0.09	0.04
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	1	0.98	0.90	0.98	27.26	0.02	15.68	2.42	2,057.40	0.09	0.04
Project Year 2014											
Containerships 10,000 - 11,000 TEU	2	1.80	1.66	1.80	48.56	0.04	26.95	4.33	3,484.09	0.16	0.07
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	2	1.80	1.66	1.80	48.56	0.04	26.95	4.33	3,484.09	0.16	0.07
Project Year 2018											
Containerships 10,000 - 11,000 TEU	-	0.08	0.07	0.08	3.13	0.01	7.26	0.33	919.46	0.04	0.02
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	2	0.42	0.38	0.42	17.13	0.05	39.74	1.83	5,034.26	0.23	0.10
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	2	0.49	0.45	0.49	20.26	0.06	47.00	2.17	5,953.72	0.27	0.12

Table B1-658. Harbor Craft Peak Daily Emissions Summary - All Scenarios (continued)

Ship category	Transits	Lbs per day									
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Project Year 2023											
Containerships 12,000 - 13,000 TEU	1	0.13	0.12	0.13	5.79	0.02	14.38	0.68	1,742.05	0.08	0.04
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	1	0.19	0.17	0.19	8.37	0.03	20.81	0.98	2,520.57	0.11	0.05
Containerships 7,000 - 8,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	1	0.13	0.12	0.13	5.79	0.02	14.38	0.68	1,742.05	0.08	0.04
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	3	0.45	0.41	0.45	19.94	0.06	49.57	2.34	6,004.67	0.27	0.12
Project Year 2030											
Containerships 12,000 - 13,000 TEU	1	0.15	0.14	0.15	6.13	0.02	15.44	0.76	1,742.05	0.08	0.04
Containerships 9,000 - 10,000 TEU	2	0.22	0.20	0.22	8.86	0.03	22.34	1.09	2,520.57	0.11	0.05
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	1	0.15	0.14	0.15	6.13	0.02	15.44	0.76	1,742.05	0.08	0.04
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	4	0.52	0.48	0.52	21.11	0.06	53.22	2.60	6,004.67	0.27	0.12
Project Year 2036											
Containerships 12,000 - 13,000 TEU	1	0.17	0.16	0.17	6.42	0.02	16.35	0.82	1,742.05	0.08	0.04
Containerships 9,000 - 10,000 TEU	2	0.25	0.23	0.25	9.29	0.03	23.66	1.19	2,520.57	0.11	0.05
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	1	0.17	0.16	0.17	6.42	0.02	16.35	0.82	1,742.05	0.08	0.04
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	4	0.59	0.54	0.59	22.12	0.06	56.35	2.83	6,004.67	0.27	0.12
Project Year 2045											
Containerships 12,000 - 13,000 TEU	1	0.13	0.12	0.13	5.81	0.02	14.51	0.68	1,742.05	0.08	0.04
Containerships 9,000 - 10,000 TEU	2	0.19	0.17	0.19	8.41	0.03	21.00	0.99	2,520.57	0.11	0.05
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	1	0.13	0.12	0.13	5.81	0.02	14.51	0.68	1,742.05	0.08	0.04
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	4	0.45	0.42	0.45	20.04	0.06	50.02	2.36	6,004.67	0.27	0.12

Table B1-659. Harbor Craft Peak 8-hr Emissions Summary - All Scenarios

Ship category	Transits	Lbs per day									
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Base Year 2008											
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	1	1.74	1.60	1.74	40.27	0.02	11.47	2.75	1,727.46	0.08	0.04
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	1	1.74	1.60	1.74	40.27	0.02	11.47	2.75	1,727.46	0.08	0.04
Total	2	3.48	3.21	3.48	80.54	0.04	22.93	5.50	3,454.91	0.16	0.09
Project Year 2012											
Containerships 10,000 - 11,000 TEU	1	0.98	0.90	0.98	27.26	0.02	15.68	2.42	2,057.40	0.09	0.04
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	1	0.98	0.90	0.98	27.26	0.02	15.68	2.42	2,057.40	0.09	0.04
Total	2	1.95	1.81	1.95	54.51	0.04	31.36	4.84	4,114.81	0.19	0.08
Project Year 2014											
Containerships 10,000 - 11,000 TEU	2	0.27	0.25	0.27	7.71	0.01	4.94	0.80	626.34	0.03	0.01
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	2	0.27	0.25	0.27	7.71	0.01	4.94	0.80	626.34	0.03	0.01
Project Year 2018											
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	1	0.27	0.25	0.27	11.07	0.03	25.68	1.19	3,252.70	0.15	0.07
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	1	0.27	0.25	0.27	11.07	0.03	25.68	1.19	3,252.70	0.15	0.07
Total	2	0.54	0.49	0.54	22.13	0.07	51.35	2.37	6,505.39	0.29	0.13

Table B1-659. Harbor Craft Peak 8-hr Emissions Summary - All Scenarios (continued)

Ship category	Transits	Lbs per day									
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Project Year 2023											
Containerships 12,000 - 13,000 TEU	1	0.05	0.05	0.05	2.23	0.01	5.53	0.26	670.02	0.03	0.01
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	1	0.08	0.07	0.08	3.52	0.01	8.74	0.41	1,059.28	0.05	0.02
Containerships 7,000 - 8,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	1	0.03	0.03	0.03	1.43	0.00	3.56	0.17	430.73	0.02	0.01
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	3	0.16	0.15	0.16	7.17	0.02	17.83	0.84	2,160.02	0.10	0.04
Project Year 2030											
Containerships 12,000 - 13,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	2	0.09	0.08	0.09	3.72	0.01	9.39	0.46	1,059.28	0.05	0.02
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	1	0.06	0.05	0.06	2.36	0.01	5.94	0.29	670.02	0.03	0.01
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	4	0.15	0.14	0.15	6.08	0.02	15.33	0.75	1,729.30	0.08	0.04
Project Year 2036											
Containerships 12,000 - 13,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	2	0.10	0.09	0.10	3.90	0.01	9.94	0.50	1,059.28	0.05	0.02
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	1	0.07	0.06	0.07	2.47	0.01	6.29	0.32	670.02	0.03	0.01
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	4	0.17	0.16	0.17	6.37	0.02	16.23	0.81	1,729.30	0.08	0.04
Project Year 2045											
Containerships 12,000 - 13,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	2	0.08	0.07	0.08	3.54	0.01	8.82	0.42	1,059.28	0.05	0.02
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	1	0.05	0.05	0.05	2.24	0.01	5.58	0.26	670.02	0.03	0.01
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	4	0.13	0.12	0.13	5.77	0.02	14.40	0.68	1,729.30	0.08	0.04

Table B1-660. Harbor Craft Peak Hour Emissions Summary - All Scenarios

Ship category	Transits	Lbs per hour									
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Base Year 2008											
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	1	1.74	1.60	1.74	40.27	0.02	11.47	2.75	1,727.46	0.08	0.04
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	1	1.74	1.60	1.74	40.27	0.02	11.47	2.75	1,727.46	0.08	0.04
Project Year 2012											
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	1	0.98	0.90	0.98	27.26	0.02	15.68	2.42	2,057.40	0.09	0.04
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	1	0.98	0.90	0.98	27.26	0.02	15.68	2.42	2,057.40	0.09	0.04
Project Year 2014											
Containerships 10,000 - 11,000 TEU	-	0.27	0.25	0.27	7.71	0.01	4.94	0.80	626.34	0.03	0.01
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	-	0.27	0.25	0.27	7.71	0.01	4.94	0.80	626.34	0.03	0.01
Project Year 2018											
Containerships 10,000 - 11,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 6,000 - 7,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-	-

Table B1-660. Harbor Craft Peak Hour Emissions Summary - All Scenarios (continued)

Ship category	Transits	Lbs per hour									
		PM10	PM2.5	DPM	NOx	SOx	CO	HC	CO2	N2O	CH4
Project Year 2023											
Containerships 12,000 - 13,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 5,000 - 6,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	3	-	-	-	-	-	-	-	-	-	-
Project Year 2030											
Containerships 12,000 - 13,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	1	0.06	0.05	0.06	2.36	0.01	5.94	0.29	670.02	0.03	0.01
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	3	0.06	0.05	0.06	2.36	0.01	5.94	0.29	670.02	0.03	0.01
Project Year 2036											
Containerships 12,000 - 13,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	1	0.07	0.06	0.07	2.47	0.01	6.29	0.32	670.02	0.03	0.01
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	3	0.07	0.06	0.07	2.47	0.01	6.29	0.32	670.02	0.03	0.01
Project Year 2045											
Containerships 12,000 - 13,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 9,000 - 10,000 TEU	1	-	-	-	-	-	-	-	-	-	-
Containerships 8,000 - 9,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 7,000 - 8,000 TEU	1	0.05	0.05	0.05	2.24	0.01	5.58	0.26	670.02	0.03	0.01
Containerships 5,000 - 6,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 4,000 - 5,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 3,000 - 4,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 2,000 - 3,000 TEU	-	-	-	-	-	-	-	-	-	-	-
Containerships 1,000 - 2,000 TEU	-	-	-	-	-	-	-	-	-	-	-
General Cargo Vessels	-	-	-	-	-	-	-	-	-	-	-
Total	3	0.05	0.05	0.05	2.24	0.01	5.58	0.26	670.02	0.03	0.01

2008 EIR/EIS
Mitigated Emissions Inventory
(FEIR Mitigated Scenario)

Table B1-661. FEIR Mitigated Scenario Annual Emissions by Source Category and Analysis Year in ton/year

		Source category									
Values	**Year**	**CHE**	**OGV**	**Harbor Craft**	**Onsite Trucks**	**Offsite Trucks**	**Onsite PC**	**Offsite PC**	**Rail Offsite**	**Rail Onsite**	**Grand Total**
Sum of NOx	2008	40.94	54.78	1.05	15.66	171.71	0.09	0.73	199.50	13.08	497.57
	2012	57.32	48.89	0.71	15.61	108.02	0.07	0.49	176.47	12.06	419.65
	2014	92.76	181.51	2.06	33.28	213.86	0.06	0.35	171.44	12.59	707.91
	2018	11.54	302.31	0.99	32.48	206.41	0.08	0.30	202.64	11.65	768.39
	2023	19.18	279.30	0.93	22.58	110.17	0.06	0.19	243.95	11.96	688.32
	2030	14.97	222.03	0.99	25.62	96.31	0.05	0.13	177.25	8.50	545.84
	2036	17.07	144.29	1.04	25.84	88.85	0.04	0.11	114.60	5.98	397.81
	2045	17.38	63.73	0.94	25.84	97.57	0.04	0.11	62.08	3.81	271.49
Sum of VOC	2008	4.05	2.77	0.08	2.69	10.92	0.12	0.24	10.43	0.69	31.98
	2012	12.86	4.28	0.07	0.96	3.33	0.10	0.15	8.71	0.60	31.07
	2014	29.40	6.67	0.19	1.85	5.41	0.07	0.11	7.52	0.56	51.79
	2018	5.00	16.76	0.11	1.89	6.17	0.09	0.08	7.69	0.46	38.26
	2023	14.77	9.72	0.12	1.32	1.47	0.07	0.04	8.74	0.44	36.69
	2030	7.39	18.08	0.13	1.40	1.03	0.04	0.02	6.10	0.31	34.50
	2036	15.03	18.08	0.14	1.39	0.80	0.03	0.01	3.88	0.22	39.59
	2045	16.17	18.08	0.12	1.38	0.73	0.02	0.01	2.27	0.15	38.93
Sum of CO	2008	97.13	4.00	0.30	7.37	42.73	0.84	7.74	35.23	2.37	197.71
	2012	221.10	6.53	0.41	3.61	11.31	0.68	5.54	37.61	2.73	289.52
	2014	487.63	9.93	1.14	8.40	15.36	0.55	4.17	38.60	3.03	568.81
	2018	31.90	21.90	2.30	8.95	19.11	0.83	4.37	45.12	2.82	137.29
	2023	67.78	16.82	2.32	18.30	6.82	0.84	3.45	67.95	3.44	187.73
	2030	59.00	35.01	2.49	20.33	7.30	0.72	2.85	71.16	3.42	202.30
	2036	73.97	35.01	2.64	20.43	7.35	0.64	2.59	67.27	3.38	213.29
	2045	76.55	35.01	2.34	20.43	8.37	0.60	2.57	61.92	3.38	211.17
Sum of PM25	2008	0.95	3.20	0.04	0.60	5.30	0.00	0.05	6.45	0.42	17.02
	2012	1.46	1.13	0.02	0.09	2.27	0.00	0.05	5.47	0.35	10.84
	2014	1.32	2.69	0.07	0.09	2.48	0.00	0.05	4.72	0.33	11.76
	2018	0.36	3.82	0.02	0.11	3.39	0.00	0.09	4.65	0.25	12.69
	2023	0.65	3.51	0.02	0.06	2.19	0.00	0.11	5.16	0.24	11.95
	2030	0.53	5.16	0.02	0.06	2.32	0.00	0.12	3.43	0.16	11.80
	2036	0.71	5.16	0.03	0.06	2.26	0.00	0.11	1.99	0.10	10.42
	2045	0.73	5.16	0.02	0.06	2.11	0.00	0.12	0.94	0.05	9.20
Sum of PM10	2008	1.01	4.00	0.05	0.64	6.05	0.00	0.12	7.04	0.45	19.35
	2012	1.52	1.22	0.03	0.12	3.25	0.00	0.12	5.90	0.38	12.55
	2014	1.33	2.95	0.08	0.15	4.53	0.00	0.12	5.07	0.35	14.58
	2018	0.39	4.14	0.02	0.17	5.32	0.01	0.21	5.04	0.27	15.56
	2023	0.71	3.80	0.02	0.13	4.48	0.01	0.27	5.54	0.26	15.21
	2030	0.57	5.59	0.02	0.14	4.83	0.01	0.29	3.61	0.16	15.22
	2036	0.77	5.59	0.03	0.14	4.80	0.01	0.28	2.05	0.10	13.77
	2045	0.80	5.59	0.02	0.14	4.66	0.01	0.29	0.94	0.05	12.50
Sum of PM10TW	2008				0.01	0.30	0.00	0.02			0.33
	2012				0.01	0.52	0.00	0.02			0.56
	2014	0.00	0.00	0.00	0.03	1.15	0.00	0.02	0.00	0.00	1.20
	2018				0.03	1.05	0.00	0.04			1.12
	2023	0.00	0.00	0.00	0.04	1.30	0.00	0.05	0.00	0.00	1.39
	2030	0.00	0.00	0.00	0.04	1.43	0.00	0.05	0.00	0.00	1.52
	2036	0.00	0.00	0.00	0.04	1.45	0.00	0.05	0.00	0.00	1.54
	2045	0.00	0.00	0.00	0.04	1.46	0.00	0.05	0.00	0.00	1.55
Sum of PM10BW	2008				0.02	0.52	0.00	0.09			0.62
	2012				0.02	0.90	0.00	0.09			1.02
	2014	0.00	0.00	0.00	0.06	1.97	0.00	0.09	0.00	0.00	2.12
	2018				0.05	1.81	0.01	0.16			2.03
	2023	0.00	0.00	0.00	0.07	2.23	0.01	0.21	0.00	0.00	2.51
	2030	0.00	0.00	0.00	0.08	2.45	0.01	0.23	0.00	0.00	2.76
	2036	0.00	0.00	0.00	0.08	2.49	0.01	0.23	0.00	0.00	2.80
	2045	0.00	0.00	0.00	0.08	2.50	0.01	0.23	0.00	0.00	2.81
Sum of SOx	2008	0.03	43.14	0.00	0.01	0.15	0.00	0.01	0.14	0.01	43.49
	2012	0.06	4.95	0.00	0.02	0.25	0.00	0.01	0.15	0.01	5.45
	2014	0.11	7.02	0.00	0.04	0.54	0.00	0.01	0.15	0.01	7.88
	2018	0.25	9.54	0.00	0.04	0.49	0.00	0.01	0.18	0.01	10.53
	2023	0.15	8.45	0.00	0.05	0.58	0.00	0.01	0.26	0.01	9.52
	2030	0.16	8.55	0.00	0.05	0.53	0.00	0.01	0.28	0.01	9.60
	2036	0.16	8.55	0.00	0.04	0.46	0.00	0.01	0.26	0.01	9.51
	2045	0.16	8.55	0.00	0.04	0.40	0.00	0.01	0.24	0.01	9.42
Sum of CO2	2008	7267.02	2602.41	45.21	1294.26	14975.26	48.89	818.11	13597.00	911.57	41559.73
	2012	14068.08	2491.64	53.38	2244.12	25063.94	49.93	830.81	14512.34	1048.07	60362.32
	2014	24303.38	11933.91	147.82	5541.12	53495.69	45.70	774.16	14896.86	1161.31	112299.95
	2018	22992.41	14377.33	290.79	5212.30	48706.91	84.74	1289.95	17408.67	1080.94	111444.04
	2023	35391.18	12727.55	281.10	6377.40	54915.88	94.05	1457.95	26219.68	1323.23	138788.03
	2030	39476.73	12883.51	281.10	6073.99	51823.29	87.05	1338.86	27458.44	1314.66	140737.62
	2036	39501.04	12883.51	281.10	5307.14	45383.67	79.94	1224.13	25956.64	1301.43	131918.60
	2045	39476.33	12883.51	281.10	4594.07	40083.61	78.30	1219.53	23890.20	1301.26	123807.92
Sum of CH4	2008	0.53	0.03	0.00	0.16	0.73	0.02	0.05	1.10	0.07	2.69
	2012	1.19	0.03	0.00	0.05	0.22	0.02	0.03	1.17	0.08	2.80
	2014	2.11	0.13	0.00	0.10	0.36	0.01	0.02	1.21	0.09	4.05
	2018	0.78	0.16	0.01	0.11	0.41	0.02	0.02	1.41	0.09	3.00
	2023	2.20	0.17	0.01	0.06	0.10	0.02	0.01	2.12	0.11	4.79
	2030	2.58	0.17	0.01	0.07	0.07	0.01	0.01	2.22	0.11	5.23
	2036	2.25	0.17	0.01	0.07	0.05	0.01	0.00	2.10	0.10	4.76
	2045	1.38	0.17	0.01	0.07	0.05	0.01	0.00	1.93	0.10	3.72
Sum of N2O	2008	0.00	0.17	0.00	0.08	2.54	0.01	0.05	0.36	0.02	3.24
	2012	0.00	0.16	0.00	0.12	4.39	0.01	0.04	0.38	0.03	5.13
	2014	0.00	0.82	0.01	0.27	9.42	0.01	0.03	0.39	0.03	10.98
	2018	0.00	0.98	0.01	0.25	8.67	0.01	0.03	0.46	0.03	10.44
	2023	0.00	0.84	0.01	0.32	10.28	0.01	0.02	0.69	0.03	12.21
	2030	0.00	0.74	0.01	0.29	9.45	0.01	0.02	0.72	0.03	11.28
	2036	0.00	0.74	0.01	0.25	8.20	0.01	0.02	0.68	0.03	9.94
	2045	0.00	0.74	0.01	0.21	4.41	0.01	0.02	0.63	0.03	6.07
Sum of DPM	2008	0.64	3.11	0.05	0.61	5.23	0.00	0.00	7.04	0.45	17.13
	2012	0.81	1.13	0.03	0.04	0.93	0.00	0.00	5.90	0.38	9.22
	2014	0.12	2.10	0.08	0.02	0.47	0.00	0.00	5.07	0.35	8.20
	2018	0.21	3.22	0.02	0.00	0.12	0.00	0.00	5.04	0.27	8.88
	2023	0.27	3.19	0.02	0.00	0.05	0.00	0.00	5.54	0.26	9.32
	2030	0.18	4.99	0.02	0.00	0.05	0.00	0.00	3.61	0.16	9.02
	2036	0.26	4.99	0.03	0.00	0.04	0.00	0.00	2.05	0.10	7.47
	2045	0.35	4.99	0.02	0.00	0.04	0.00	0.00	0.94	0.05	6.39

Table B1-662. Annual FEIR Mitigated Scenario different type of PM10 emissions by Fuel Type and Source Category in ton/year

Source category	Fuel	Year	PM10exh,tire,brk	PM10fugdust	DPM
CHE	Diesel	2008	0.6		0.6
		2012	0.8		0.8
		2014	0.1	0.0	0.1
		2018	0.2		0.2
		2023	0.3	0.0	0.3
		2030	0.2	0.0	0.2
		2036	0.3	0.0	0.3
		2045	0.3	0.0	0.3
	LPG	2008	0.4		0.0
		2012	0.7		0.0
		2014	1.2	0.0	0.0
OGV	MGO/MDO	2008	4.0		3.1
		2012	1.2		1.1
		2014	3.0	0.0	2.1
		2018	4.1		3.2
		2023	3.8	0.0	3.2
		2030	5.6	0.0	5.0
		2036	5.6	0.0	5.0
		2045	5.6	0.0	5.0
Harbor Craft	MGO/MDO	2008	0.0		0.0
		2012	0.0		0.0
		2014	0.1	0.0	0.1
		2018	0.0		0.0
		2023	0.0	0.0	0.0
		2030	0.0	0.0	0.0
		2036	0.0	0.0	0.0
		2045	0.0	0.0	0.0
Onsite Trucks	Diesel	2008	0.6	0.9	0.6
		2012	0.1	1.2	0.0
		2014	0.0	2.7	0.0
		2018	0.0	0.0	0.0
		2023	0.0	3.3	0.0
		2030	0.0	3.7	0.0
		2036	0.0	3.7	0.0
		2045	0.0	3.7	0.0
	95% LNG+5% Diesel	2008	0.0	0.0	0.0
		2012	0.1	0.1	0.0
		2014	0.1	0.2	0.0
		2018	0.2	2.8	0.0
		2023	0.1	0.3	0.0
		2030	0.1	0.3	0.0
		2036	0.1	0.3	0.0
		2045	0.1	0.3	0.0
Offsite Trucks	LNG+Diesel	2008	6.0	0.6	5.2
		2012	3.3	1.1	0.9
		2014	4.5	2.4	0.5
		2018	5.3	2.2	0.1
		2023	4.5	2.6	0.0
		2030	4.8	2.9	0.0
		2036	4.8	2.9	0.0
		2045	4.7	2.9	0.0
Onsite PC	Diesel/Gas/Elec	2008	0.0	0.0	0.0
		2012	0.0	0.0	0.0
		2014	0.0	0.0	0.0
		2018	0.0	0.1	0.0
		2023	0.0	0.1	0.0
		2030	0.0	0.1	0.0
		2036	0.0	0.1	0.0
		2045	0.0	0.1	0.0
Offsite PC	Diesel/Gas/Elec	2008	0.1	0.2	0.0
		2012	0.1	0.2	0.0
		2014	0.1	0.2	0.0
		2018	0.2	0.4	0.0
		2023	0.3	0.4	0.0
		2030	0.3	0.5	0.0
		2036	0.3	0.5	0.0
		2045	0.3	0.5	0.0
Rail Offsite	Diesel	2008	7.0		7.0
		2012	5.9		5.9
		2014	5.1	0.0	5.1
		2018	5.0		5.0
		2023	5.5	0.0	5.5
		2030	3.6	0.0	3.6
		2036	2.1	0.0	2.1
		2045	0.9	0.0	0.9
Rail Onsite	Diesel	2008	0.5		0.5
		2012	0.4		0.4
		2014	0.4	0.0	0.4
		2018	0.3		0.3
		2023	0.3	0.0	0.3
		2030	0.2	0.0	0.2
		2036	0.1	0.0	0.1
		2045	0.1	0.0	0.1
Grand Total			**116.8**	**44.5**	**75.6**

Table B1-663. FEIR Mitigated Scenario Peakday Emissions by Source Category and Analysis Year in lbs/day

		Source category									
Values	**Year**	**CHE**	**OGV**	**Harbor Craft**	**Onsite Trucks**	**Offsite Trucks**	**Onsite PC**	**Offsite PC**	**Rail Offsite**	**Rail Onsite**	**Grand Total**
Sum of NOx	2008	349.67	1,138.36	40.27	133.70	1,466.46	0.80	6.26	1,703.78	111.75	4,951.05
	2012	457.77	417.27	27.26	124.69	862.76	0.59	3.94	1,409.41	96.32	3,400.01
	2014	771.39	4,452.97	48.56	276.74	1,778.48	0.47	2.88	1,425.72	104.71	8,861.92
	2018	97.53	3,907.77	20.26	274.53	1,744.86	0.64	2.57	1,713.03	98.44	7,859.63
	2023	155.34	5,622.88	19.94	182.88	892.23	0.52	1.54	1,975.64	96.84	8,947.81
	2030	121.23	4,594.11	21.11	207.46	779.95	0.41	1.02	1,435.51	68.85	7,229.66
	2036	138.21	2,991.53	22.12	209.23	719.56	0.36	0.87	928.14	48.43	5,058.45
	2045	140.73	1,287.99	20.04	209.24	790.22	0.36	0.86	502.73	30.84	2,983.01
Sum of VOC	2008	34.55	61.90	2.89	22.96	93.22	1.04	2.03	89.08	5.92	313.60
	2012	102.75	48.82	2.55	7.65	26.58	0.77	1.23	69.60	4.79	264.73
	2014	244.51	218.44	4.56	15.36	44.96	0.62	0.89	62.53	4.69	596.56
	2018	42.31	289.08	2.28	15.98	52.12	0.78	0.72	65.02	3.91	472.21
	2023	119.61	193.20	2.47	10.70	11.89	0.56	0.36	70.78	3.60	413.17
	2030	59.82	371.96	2.74	11.37	8.32	0.36	0.18	49.44	2.50	506.69
	2036	121.76	371.96	2.98	11.23	6.50	0.25	0.12	31.45	1.76	548.00
	2045	130.95	371.96	2.48	11.16	5.93	0.19	0.09	18.42	1.23	542.41
Sum of CO	2008	829.48	70.44	11.47	62.92	364.94	7.17	66.11	300.90	20.23	1733.64
	2012	1765.90	77.72	15.68	28.83	90.35	5.44	44.21	300.35	21.79	2350.28
	2014	4055.11	273.90	26.95	69.87	127.77	4.61	34.66	321.03	25.16	4939.05
	2018	269.63	123.65	47.00	75.66	161.55	7.03	36.95	381.41	23.84	1126.72
	2023	548.89	340.30	49.57	148.21	55.20	6.81	27.98	550.34	27.88	1755.18
	2030	477.85	716.36	53.22	164.65	59.11	5.84	23.11	576.34	27.69	2104.19
	2036	599.09	716.36	56.35	165.45	59.55	5.16	20.96	544.81	27.40	2195.13
	2045	619.96	716.36	50.02	165.45	67.80	4.85	20.78	501.45	27.40	2174.07
Sum of PM25	2008	8.15	86.70	1.60	5.09	45.26	0.02	0.43	55.09	3.56	205.91
	2012	11.63	14.26	0.90	0.72	18.11	0.02	0.40	43.65	2.83	92.53
	2014	10.97	70.68	1.66	0.77	20.66	0.02	0.40	39.28	2.72	147.15
	2018	3.06	38.89	0.45	0.95	28.64	0.03	0.73	39.28	2.10	114.13
	2023	5.28	70.51	0.41	0.46	17.73	0.04	0.89	41.79	1.96	139.06
	2030	4.27	105.93	0.48	0.50	18.81	0.04	0.95	27.75	1.26	159.97
	2036	5.73	105.93	0.54	0.49	18.29	0.04	0.92	16.15	0.79	148.87
	2045	5.95	105.93	0.42	0.49	17.11	0.03	0.93	7.63	0.43	138.92
Sum of PM10	2008	8.59	107.78	1.74	5.45	51.66	0.04	0.99	60.10	3.88	240.24
	2012	12.15	15.35	0.98	0.95	25.99	0.03	0.96	47.15	3.06	106.63
	2014	11.05	77.17	1.80	1.26	37.66	0.03	0.96	42.13	2.91	174.98
	2018	3.33	42.07	0.49	1.43	44.97	0.07	1.76	42.57	2.28	138.96
	2023	5.74	76.32	0.45	1.02	36.25	0.08	2.16	44.84	2.10	168.96
	2030	4.64	114.70	0.52	1.12	39.12	0.08	2.33	29.22	1.32	193.05
	2036	6.23	114.70	0.59	1.11	38.90	0.08	2.28	16.61	0.81	181.31
	2045	6.46	114.70	0.45	1.11	37.75	0.08	2.32	7.64	0.43	170.94
Sum of PM10TW	2008				0.08	2.58	0.00	0.16			2.83
	2012				0.12	4.19	0.00	0.16			4.48
	2014	0.00	0.00	0.00	0.27	9.53	0.00	0.17	0.00	0.00	9.97
	2018				0.26	8.92	0.01	0.30			9.49
	2023	0.00	0.00	0.00	0.32	10.51	0.01	0.38	0.00	0.00	11.22
	2030	0.00	0.00	0.00	0.36	11.55	0.01	0.41	0.00	0.00	12.32
	2036	0.00	0.00	0.00	0.36	11.74	0.01	0.40	0.00	0.00	12.51
	2045	0.00	0.00	0.00	0.36	11.79	0.01	0.41	0.00	0.00	12.57
Sum of PM10BW	2008				0.14	4.42	0.02	0.75			5.34
	2012				0.20	7.19	0.02	0.75			8.16
	2014	0.00	0.00	0.00	0.47	16.34	0.02	0.76	0.00	0.00	17.60
	2018				0.45	15.29	0.05	1.39			17.18
	2023	0.00	0.00	0.00	0.55	18.03	0.06	1.72	0.00	0.00	20.36
	2030	0.00	0.00	0.00	0.61	19.80	0.06	1.87	0.00	0.00	22.35
	2036	0.00	0.00	0.00	0.61	20.13	0.06	1.85	0.00	0.00	22.65
	2045	0.00	0.00	0.00	0.61	20.21	0.06	1.88	0.00	0.00	22.77
Sum of SOx	2008	0.28	1154.16	0.02	0.08	1.27	0.00	0.07	1.17	0.08	1157.14
	2012	0.49	82.40	0.02	0.14	2.02	0.00	0.07	1.17	0.08	86.38
	2014	0.89	143.22	0.04	0.37	4.46	0.00	0.06	1.25	0.10	150.39
	2018	2.10	98.93	0.06	0.35	4.16	0.01	0.11	1.49	0.09	107.29
	2023	1.19	164.98	0.06	0.38	4.67	0.01	0.12	2.14	0.11	173.67
	2030	1.33	170.01	0.06	0.38	4.30	0.01	0.11	2.25	0.11	178.54
	2036	1.33	170.01	0.06	0.33	3.74	0.01	0.10	2.12	0.11	177.82
	2045	1.33	170.01	0.06	0.29	3.22	0.01	0.10	1.95	0.11	177.08
Sum of CO2	2008	62061.03	73496.74	1727.46	11052.99	127890.05	417.55	6986.72	116119.66	7784.91	407537.12
	2012	112357.55	37700.85	2057.40	17922.93	200178.19	398.80	6635.45	115905.70	8370.60	501527.47
	2014	202106.61	273158.61	3484.09	46079.50	444869.51	380.07	6437.90	123882.15	9657.47	1110055.90
	2018	194364.08	148869.00	5953.72	44061.26	411739.09	716.31	10904.47	147162.48	9137.63	972908.04
	2023	286622.33	248313.50	6004.67	51648.23	444746.93	761.72	11807.49	212345.16	10716.45	1272966.48
	2030	319709.92	255881.61	6004.67	49190.99	419700.93	705.01	10843.01	222377.46	10647.02	1295060.62
	2036	319906.81	255881.61	6004.67	42980.52	367548.42	647.44	9913.84	210214.91	10539.86	1223638.10
	2045	319706.67	255881.61	6004.67	37205.67	324624.92	634.12	9876.62	193479.44	10538.51	1157952.24
Sum of CH4	2008	4.52	0.58	0.04	1.39	6.26	0.19	0.39	9.40	0.63	23.40
	2012	9.52	0.22	0.04	0.44	1.79	0.15	0.25	9.38	0.67	22.45
	2014	17.56	4.15	0.07	0.86	3.02	0.12	0.18	10.03	0.77	36.77
	2018	6.59	1.57	0.12	0.91	3.50	0.16	0.17	11.91	0.73	25.66
	2023	17.78	3.33	0.12	0.52	0.80	0.13	0.10	17.19	0.86	40.83
	2030	20.89	3.40	0.12	0.54	0.56	0.09	0.05	18.00	0.86	44.52
	2036	18.20	3.40	0.12	0.53	0.44	0.07	0.04	17.01	0.85	40.66
	2045	11.18	3.40	0.12	0.53	0.40	0.05	0.03	15.66	0.85	32.22
Sum of N2O	2008	0.00	4.47	0.08	0.67	21.73	0.06	0.42	3.06	0.20	30.68
	2012	0.00	2.66	0.09	0.97	35.05	0.05	0.28	3.05	0.22	42.38
	2014	0.00	17.43	0.16	2.25	78.35	0.04	0.22	3.26	0.25	101.96
	2018	0.00	10.51	0.27	2.15	73.30	0.07	0.24	3.87	0.24	90.66
	2023	0.00	15.96	0.27	2.55	83.29	0.07	0.19	5.59	0.28	108.21
	2030	0.00	14.24	0.27	2.37	76.49	0.06	0.16	5.85	0.28	99.72
	2036	0.00	14.24	0.27	2.03	66.37	0.06	0.14	5.53	0.28	88.92
	2045	0.00	14.24	0.27	1.74	57.12	0.06	0.15	5.09	0.28	78.94
Sum of DPM	2008	5.47	82.81	1.74	5.24	44.65	0.00	0.00	60.10	3.88	203.89
	2012	6.45	13.63	0.98	0.32	7.41	0.00	0.00	47.15	3.06	79.01
	2014	0.98	63.20	1.80	0.17	3.95	0.00	0.00	42.13	2.91	115.15
	2018	1.75	31.89	0.49	0.04	1.04	0.00	0.00	42.57	2.28	80.06
	2023	2.18	65.99	0.45	0.01	0.39	0.00	0.00	44.84	2.10	115.94
	2030	1.47	104.66	0.52	0.01	0.39	0.00	0.00	29.22	1.32	137.59
	2036	2.11	104.66	0.59	0.01	0.35	0.00	0.00	16.61	0.81	125.14
	2045	2.82	104.66	0.45	0.01	0.29	0.00	0.00	7.64	0.43	116.30

Table B1-664. Peakday FEIR Mitigated Scenario different type of PM10 emissions by Fuel Type and Source Category in lbs/day

Source category	Fuel	Year	PM10exh,tire,brk	PM10fugdust	DPM
CHE	Diesel	2008	5.5		5.5
		2012	6.4		6.4
		2014	1.0	0.0	1.0
		2018	1.8		1.8
		2023	2.2	0.0	2.2
		2030	1.5	0.0	1.5
		2036	2.1	0.0	2.1
		2045	2.8	0.0	2.8
	LPG	2008	3.1		0.0
		2012	5.7		0.0
		2014	10.1	0.0	0.0
OGV	MDO/MGO	2008	107.8		82.8
		2012	15.4		13.6
		2014	77.2	0.0	63.2
		2018	42.1		31.9
		2023	76.3	0.0	66.0
		2030	114.7	0.0	104.7
		2036	114.7	0.0	104.7
		2045	114.7	0.0	104.7
Harbor Craft	MDO/MGO	2008	1.7		1.7
		2012	1.0		1.0
		2014	1.8	0.0	1.8
		2018	0.5		0.5
		2023	0.4	0.0	0.4
		2030	0.5	0.0	0.5
		2036	0.6	0.0	0.6
		2045	0.5	0.0	0.5
Onsite Trucks	Diesel	2008	5.5	7.3	5.2
		2012	0.5	9.5	0.3
		2014	0.4	22.7	0.2
		2018	0.0	0.0	0.0
		2023	0.0	26.9	0.0
		2030	0.0	29.9	0.0
		2036	0.0	30.1	0.0
		2045	0.0	30.2	0.0
	95% LNG+5% Diesel	2008	0.0	0.0	0.0
		2012	0.5	1.1	0.0
		2014	0.9	2.0	0.0
		2018	1.4	23.8	0.0
		2023	1.0	2.4	0.0
		2030	1.1	2.7	0.0
		2036	1.1	2.7	0.0
		2045	1.1	2.7	0.0
Offsite Trucks	LNG+Diesel	2008	51.7	5.3	44.7
		2012	26.0	8.5	7.4
		2014	37.7	20.0	3.9
		2018	45.0	18.5	1.0
		2023	36.3	20.9	0.4
		2030	39.1	23.1	0.4
		2036	38.9	23.7	0.4
		2045	37.8	23.6	0.3
Onsite PC	Diesel/Gas/Elec	2008	0.0	0.2	0.0
		2012	0.0	0.2	0.0
		2014	0.0	0.2	0.0
		2018	0.1	0.5	0.0
		2023	0.1	0.6	0.0
		2030	0.1	0.7	0.0
		2036	0.1	0.7	0.0
		2045	0.1	0.7	0.0
Offsite PC	Diesel/Gas/Elec	2008	1.0	1.6	0.0
		2012	1.0	1.6	0.0
		2014	1.0	1.7	0.0
		2018	1.8	3.0	0.0
		2023	2.2	3.4	0.0
		2030	2.3	3.8	0.0
		2036	2.3	3.8	0.0
		2045	2.3	3.9	0.0
Rail Offsite	Diesel	2008	60.1		60.1
		2012	47.2		47.2
		2014	42.1	0.0	42.1
		2018	42.6		42.6
		2023	44.8	0.0	44.8
		2030	29.2	0.0	29.2
		2036	16.6	0.0	16.6
		2045	7.6	0.0	7.6
Rail Onsite	Diesel	2008	3.9		3.9
		2012	3.1		3.1
		2014	2.9	0.0	2.9
		2018	2.3		2.3
		2023	2.1	0.0	2.1
		2030	1.3	0.0	1.3
		2036	0.8	0.0	0.8
		2045	0.4	0.0	0.4
Grand Total			**1359.0**	**363.9**	**973.1**

Table B1-665. FEIR Mitigated Scenario Peak 8hr Emissions by Source Category and Analysis Year in lbs/8-hr

		Source category									
Values	Year	CHE	OGV	Harbor Craft	Onsite Trucks	Offsite Trucks	Onsite PC	Offsite PC	Rail Offsite	Rail Onsite	Grand Total
Sum of NOx	2008	216.58	645.31	40.27	82.81	908.30	0.50	3.88	567.93	37.25	2,502.83
	2012	225.07	378.68	27.26	61.31	424.20	0.29	1.94	469.80	32.11	1,620.66
	2014	377.69	3,471.28	7.71	135.50	870.79	0.23	1.41	475.24	34.90	5,374.74
	2018	48.09	2,747.39	11.07	135.37	860.38	0.32	1.27	571.01	32.81	4,407.71
	2023	82.29	1,802.74	7.17	96.88	472.63	0.27	0.82	658.55	32.28	3,153.62
	2030	64.22	1,634.52	6.08	109.89	413.15	0.21	0.54	478.50	22.95	2,730.08
	2036	73.21	947.69	6.37	110.84	381.16	0.19	0.46	309.38	16.14	1,845.45
	2045	74.55	519.11	5.77	110.84	418.59	0.19	0.46	167.58	10.28	1,307.36
Sum of VOC	2008	21.40	44.98	2.89	14.22	57.74	0.65	1.26	29.69	1.97	174.81
	2012	50.52	40.94	2.55	3.76	13.07	0.38	0.60	23.20	1.60	136.62
	2014	119.72	173.39	0.84	7.52	22.01	0.30	0.44	20.84	1.56	346.63
	2018	20.86	215.19	1.25	7.88	25.70	0.38	0.35	21.67	1.30	294.60
	2023	63.36	54.67	0.89	5.67	6.30	0.30	0.19	23.59	1.20	156.17
	2030	31.69	161.06	0.79	6.02	4.41	0.19	0.10	16.48	0.83	221.57
	2036	64.50	161.06	0.86	5.95	3.44	0.13	0.06	10.48	0.59	247.08
	2045	69.37	161.06	0.72	5.91	3.14	0.10	0.05	6.14	0.41	246.90
Sum of CO	2008	513.77	29.09	11.47	38.97	226.04	4.44	40.95	100.30	6.74	971.77
	2012	868.26	60.55	15.68	14.18	44.42	2.68	21.74	100.12	7.26	1134.88
	2014	1985.48	189.53	4.94	34.21	62.56	2.26	16.97	107.01	8.39	2411.34
	2018	132.95	70.82	25.68	37.31	79.66	3.47	18.22	127.14	7.95	503.19
	2023	290.76	85.54	17.83	78.51	29.24	3.61	14.82	183.45	9.29	713.05
	2030	253.13	293.64	15.33	87.22	31.31	3.10	12.24	192.11	9.23	897.31
	2036	317.35	293.64	16.23	87.64	31.54	2.73	11.10	181.60	9.13	950.97
	2045	328.40	293.64	14.40	87.64	35.91	2.57	11.01	167.15	9.13	949.87
Sum of PM25	2008	5.05	36.83	1.60	3.15	28.03	0.01	0.27	18.36	1.19	94.51
	2012	5.72	11.08	0.90	0.36	8.90	0.01	0.20	14.55	0.94	42.67
	2014	5.37	48.62	0.25	0.38	10.12	0.01	0.20	13.09	0.91	78.93
	2018	1.51	22.15	0.25	0.47	14.12	0.02	0.36	13.09	0.70	52.66
	2023	2.80	21.96	0.15	0.24	9.39	0.02	0.47	13.93	0.65	49.61
	2030	2.26	44.17	0.14	0.26	9.96	0.02	0.50	9.25	0.42	66.99
	2036	3.03	44.17	0.16	0.26	9.69	0.02	0.49	5.38	0.26	63.46
	2045	3.15	44.17	0.12	0.26	9.06	0.02	0.49	2.54	0.14	59.96
Sum of PM10	2008	5.32	45.82	1.74	3.38	32.00	0.02	0.61	20.03	1.29	110.22
	2012	5.97	11.99	0.98	0.47	12.78	0.02	0.47	15.72	1.02	49.41
	2014	5.41	52.87	0.27	0.62	18.44	0.02	0.47	14.04	0.97	93.10
	2018	1.64	23.97	0.27	0.70	22.17	0.03	0.87	14.19	0.76	64.61
	2023	3.04	23.76	0.16	0.54	19.20	0.04	1.14	14.95	0.70	63.54
	2030	2.46	47.83	0.15	0.59	20.72	0.04	1.23	9.74	0.44	83.21
	2036	3.30	47.83	0.17	0.59	20.60	0.04	1.21	5.54	0.27	79.55
	2045	3.42	47.83	0.13	0.59	20.00	0.04	1.23	2.55	0.14	75.93
Sum of PM10TW	2008				0.05	1.60	0.00	0.10			1.75
	2012				0.06	2.06	0.00	0.08			2.20
	2014	0.00	0.00	0.00	0.13	4.67	0.00	0.08	0.00	0.00	4.88
	2018				0.13	4.40	0.01	0.15			4.68
	2023	0.00	0.00	0.00	0.17	5.57	0.01	0.20	0.00	0.00	5.94
	2030	0.00	0.00	0.00	0.19	6.12	0.01	0.22	0.00	0.00	6.53
	2036	0.00	0.00	0.00	0.19	6.22	0.01	0.21	0.00	0.00	6.63
	2045	0.00	0.00	0.00	0.19	6.24	0.01	0.22	0.00	0.00	6.66
Sum of PM10BW	2008				0.08	2.74	0.01	0.47			3.30
	2012				0.10	3.53	0.01	0.37			4.01
	2014	0.00	0.00	0.00	0.23	8.00	0.01	0.37	0.00	0.00	8.62
	2018				0.22	7.54	0.02	0.69			8.47
	2023	0.00	0.00	0.00	0.29	9.55	0.03	0.91	0.00	0.00	10.78
	2030	0.00	0.00	0.00	0.32	10.49	0.03	0.99	0.00	0.00	11.84
	2036	0.00	0.00	0.00	0.32	10.66	0.03	0.98	0.00	0.00	12.00
	2045	0.00	0.00	0.00	0.32	10.71	0.03	1.00	0.00	0.00	12.06
Sum of SOx	2008	0.17	444.49	0.02	0.05	0.79	0.00	0.04	0.39	0.03	445.98
	2012	0.24	43.55	0.02	0.07	0.99	0.00	0.03	0.39	0.03	45.33
	2014	0.44	101.25	0.01	0.18	2.19	0.00	0.03	0.42	0.03	104.54
	2018	1.04	49.95	0.03	0.17	2.05	0.00	0.05	0.50	0.03	53.83
	2023	0.63	56.67	0.02	0.20	2.47	0.00	0.06	0.71	0.04	60.82
	2030	0.70	68.83	0.02	0.20	2.28	0.00	0.06	0.75	0.04	72.88
	2036	0.70	68.83	0.02	0.18	1.98	0.00	0.05	0.71	0.04	72.51
	2045	0.70	68.83	0.02	0.15	1.71	0.00	0.05	0.65	0.04	72.16
Sum of CO2	2008	38439.76	28299.68	1727.46	6846.07	79213.36	258.63	4327.48	38706.55	2594.97	200413.96
	2012	55243.88	19915.10	2057.40	8812.33	98423.47	196.08	3262.51	38635.23	2790.20	229336.21
	2014	98956.03	171576.32	626.34	22561.58	217818.32	186.09	3152.15	41294.05	3219.16	559390.04
	2018	95839.69	75156.85	3252.70	21726.33	203025.92	353.21	5376.92	49054.16	3045.88	456831.66
	2023	151828.63	85196.35	2160.02	27358.93	235589.87	403.49	6254.62	70781.72	3572.15	583145.80
	2030	169355.68	103487.14	1729.30	26057.29	222322.59	373.46	5743.72	74125.82	3549.01	606744.00
	2036	169459.98	103487.14	1729.30	22767.50	194696.53	342.96	5251.53	70071.64	3513.29	571319.86
	2045	169353.96	103487.14	1729.30	19708.46	171959.24	335.90	5231.81	64493.15	3512.84	539811.80
Sum of CH4	2008	2.80	0.26	0.04	0.86	3.88	0.12	0.24	3.13	0.21	11.54
	2012	4.68	0.18	0.04	0.22	0.88	0.07	0.12	3.13	0.22	9.54
	2014	8.60	3.29	0.01	0.42	1.48	0.06	0.09	3.34	0.26	17.56
	2018	3.25	1.00	0.07	0.45	1.73	0.08	0.08	3.97	0.24	10.87
	2023	9.42	1.02	0.04	0.28	0.42	0.07	0.05	5.73	0.29	17.32
	2030	11.06	1.31	0.04	0.29	0.30	0.05	0.03	6.00	0.29	19.35
	2036	9.64	1.31	0.04	0.28	0.23	0.03	0.02	5.67	0.28	17.51
	2045	5.92	1.31	0.04	0.28	0.21	0.03	0.02	5.22	0.28	13.30
Sum of N2O	2008	0.00	1.73	0.08	0.42	13.46	0.04	0.26	1.02	0.07	17.07
	2012	0.00	1.21	0.09	0.48	17.23	0.02	0.14	1.02	0.07	20.27
	2014	0.00	10.71	0.03	1.10	38.36	0.02	0.11	1.09	0.08	51.50
	2018	0.00	5.33	0.15	1.06	36.14	0.04	0.12	1.29	0.08	44.21
	2023	0.00	5.60	0.10	1.35	44.12	0.04	0.10	1.86	0.09	53.27
	2030	0.00	5.68	0.08	1.26	40.52	0.03	0.08	1.95	0.09	49.70
	2036	0.00	5.68	0.08	1.08	35.16	0.03	0.08	1.84	0.09	44.04
	2045	0.00	5.68	0.08	0.92	30.26	0.03	0.08	1.70	0.09	38.84
Sum of DPM	2008	3.39	37.49	1.74	3.24	27.66	0.00	0.00	20.03	1.29	94.85
	2012	3.17	11.41	0.98	0.16	3.65	0.00	0.00	15.72	1.02	36.10
	2014	0.48	46.95	0.27	0.09	1.93	0.00	0.00	14.04	0.97	64.74
	2018	0.86	20.29	0.27	0.02	0.51	0.00	0.00	14.19	0.76	36.90
	2023	1.15	19.62	0.16	0.00	0.20	0.00	0.00	14.95	0.70	36.79
	2030	0.78	43.83	0.15	0.00	0.21	0.00	0.00	9.74	0.44	55.16
	2036	1.12	43.83	0.17	0.00	0.19	0.00	0.00	5.54	0.27	51.12
	2045	1.50	43.83	0.13	0.00	0.15	0.00	0.00	2.55	0.14	48.31

Table B1-666. Peak 8hr FEIR Mitigated Scenario different type of PM10 emissions by Fuel Type and Source Category in lbs/8-hr

Source category	Fuel	Year	PM10exh,tire,brk	PM10fugdust	DPM
CHE	Diesel	2008	3.4		3.4
		2012	3.2		3.2
		2014	0.5	0.0	0.5
		2018	0.9		0.9
		2023	1.2	0.0	1.2
		2030	0.8	0.0	0.8
		2036	1.1	0.0	1.1
		2045	1.5	0.0	1.5
	LPG	2008	1.9		0.0
		2012	2.8		0.0
		2014	4.9	0.0	0.0
OGV	MDO/MGO	2008	45.8		37.5
		2012	12.0		11.4
		2014	52.9	0.0	47.0
		2018	24.0		20.3
		2023	23.8	0.0	19.6
		2030	47.8	0.0	43.8
		2036	47.8	0.0	43.8
		2045	47.8	0.0	43.8
Harbor Craft	MDO/MGO	2008	1.7		1.7
		2012	1.0		1.0
		2014	0.3	0.0	0.3
		2018	0.3		0.3
		2023	0.2	0.0	0.2
		2030	0.1	0.0	0.1
		2036	0.2	0.0	0.2
		2045	0.1	0.0	0.1
Onsite Trucks	Diesel	2008	3.4	4.5	3.2
		2012	0.2	4.7	0.2
		2014	0.2	11.1	0.1
		2018	0.0	0.0	0.0
		2023	0.0	14.2	0.0
		2030	0.0	15.8	0.0
		2036	0.0	16.0	0.0
		2045	0.0	16.0	0.0
	95% LNG+5% Diesel	2008	0.0	0.0	0.0
		2012	0.2	0.5	0.0
		2014	0.4	1.0	0.0
		2018	0.7	11.7	0.0
		2023	0.5	1.3	0.0
		2030	0.6	1.4	0.0
		2036	0.6	1.4	0.0
		2045	0.6	1.4	0.0
Offsite Trucks	LNG+Diesel	2008	32.0	3.3	27.7
		2012	12.8	4.2	3.6
		2014	18.4	9.8	1.9
		2018	22.2	9.1	0.5
		2023	19.2	11.1	0.2
		2030	20.7	12.3	0.2
		2036	20.6	12.6	0.2
		2045	20.0	12.5	0.2
Onsite PC	Diesel/Gas/Elec	2008	0.0	0.2	0.0
		2012	0.0	0.1	0.0
		2014	0.0	0.1	0.0
		2018	0.0	0.2	0.0
		2023	0.0	0.3	0.0
		2030	0.0	0.4	0.0
		2036	0.0	0.4	0.0
		2045	0.0	0.4	0.0
Offsite PC	Diesel/Gas/Elec	2008	0.6	1.0	0.0
		2012	0.5	0.8	0.0
		2014	0.5	0.8	0.0
		2018	0.9	1.5	0.0
		2023	1.1	1.8	0.0
		2030	1.2	2.0	0.0
		2036	1.2	2.0	0.0
		2045	1.2	2.0	0.0
Rail Offsite	Diesel	2008	20.0		20.0
		2012	15.7		15.7
		2014	14.0	0.0	14.0
		2018	14.2		14.2
		2023	14.9	0.0	14.9
		2030	9.7	0.0	9.7
		2036	5.5	0.0	5.5
		2045	2.5	0.0	2.5
Rail Onsite	Diesel	2008	1.3		1.3
		2012	1.0		1.0
		2014	1.0	0.0	1.0
		2018	0.8		0.8
		2023	0.7	0.0	0.7
		2030	0.4	0.0	0.4
		2036	0.3	0.0	0.3
		2045	0.1	0.0	0.1
Grand Total			**611.1**	**189.7**	**424.0**

Table B1-667. FEIR Mitigated Scenario Peak hour Emissions by Source Category and Analysis Year in lbs/hr

		Source category									
Values	Year	CHE	OGV	Harbor Craft	Onsite Trucks	Offsite Trucks	Onsite PC	Offsite PC	Rail Offsite	Rail Onsite	Grand Total
Sum of NOx	2008	30.98	30.82	40.27	11.85	129.93	0.07	0.55	70.99	4.66	320.11
	2012	32.16	30.38	27.26	8.76	60.62	0.04	0.28	58.73	4.01	222.24
	2014	54.31	542.39	7.71	19.49	125.22	0.03	0.20	59.40	4.36	813.12
	2018	6.91	414.20	0.00	19.46	123.66	0.05	0.18	71.38	4.10	639.93
	2023	11.45	93.87	0.00	13.48	65.74	0.04	0.11	82.32	4.04	271.04
	2030	8.93	151.51	2.36	15.29	57.47	0.03	0.08	59.81	2.87	298.35
	2036	10.18	86.39	2.47	15.42	53.02	0.03	0.06	38.67	2.02	208.26
	2045	10.37	50.60	2.24	15.42	58.23	0.03	0.06	20.95	1.29	159.17
Sum of VOC	2008	3.06	1.06	2.89	2.03	8.26	0.09	0.18	3.71	0.25	21.54
	2012	7.22	1.46	2.55	0.54	1.87	0.05	0.09	2.90	0.20	16.87
	2014	17.22	28.32	0.84	1.08	3.17	0.04	0.06	2.61	0.20	53.53
	2018	3.00	27.08	0.00	1.13	3.69	0.06	0.05	2.71	0.16	37.88
	2023	8.81	3.50	0.00	0.79	0.88	0.04	0.03	2.95	0.15	17.15
	2030	4.41	20.10	0.31	0.84	0.61	0.03	0.01	2.06	0.10	28.47
	2036	8.97	20.10	0.33	0.83	0.48	0.02	0.01	1.31	0.07	32.12
	2045	9.65	20.10	0.28	0.82	0.44	0.01	0.01	0.77	0.05	32.12
Sum of CO	2008	73.49	2.58	11.47	5.57	32.33	0.64	5.86	12.54	0.84	145.32
	2012	124.08	3.33	15.68	2.03	6.35	0.38	3.11	12.51	0.91	168.38
	2014	285.52	27.66	4.94	4.92	9.00	0.32	2.44	13.38	1.05	349.22
	2018	19.11	11.00	0.00	5.36	11.45	0.50	2.62	15.89	0.99	66.92
	2023	40.45	8.87	0.00	10.92	4.07	0.50	2.06	22.93	1.16	90.96
	2030	35.21	29.19	5.94	12.13	4.36	0.43	1.70	24.01	1.15	114.13
	2036	44.14	29.19	6.29	12.19	4.39	0.38	1.54	22.70	1.14	121.97
	2045	45.68	29.19	5.58	12.19	5.00	0.36	1.53	20.89	1.14	121.57
Sum of PM25	2008	0.72	3.12	1.60	0.45	4.01	0.00	0.04	2.30	0.15	12.39
	2012	0.82	0.89	0.90	0.05	1.27	0.00	0.03	1.82	0.12	5.90
	2014	0.77	6.78	0.25	0.05	1.45	0.00	0.03	1.64	0.11	11.09
	2018	0.22	3.37	0.00	0.07	2.03	0.00	0.05	1.64	0.09	7.46
	2023	0.39	2.25	0.00	0.03	1.31	0.00	0.07	1.74	0.08	5.87
	2030	0.31	4.78	0.05	0.04	1.39	0.00	0.07	1.16	0.05	7.85
	2036	0.42	4.78	0.06	0.04	1.35	0.00	0.07	0.67	0.03	7.42
	2045	0.44	4.78	0.05	0.04	1.26	0.00	0.07	0.32	0.02	6.97
Sum of PM10	2008	0.76	3.87	1.74	0.48	4.58	0.00	0.09	2.50	0.16	14.19
	2012	0.85	0.96	0.98	0.07	1.83	0.00	0.07	1.96	0.13	6.85
	2014	0.78	7.37	0.27	0.09	2.65	0.00	0.07	1.76	0.12	13.10
	2018	0.24	3.65	0.00	0.10	3.19	0.00	0.12	1.77	0.09	9.17
	2023	0.42	2.44	0.00	0.08	2.67	0.01	0.16	1.87	0.09	7.73
	2030	0.34	5.18	0.06	0.08	2.88	0.01	0.17	1.22	0.06	9.99
	2036	0.46	5.18	0.07	0.08	2.87	0.01	0.17	0.69	0.03	9.55
	2045	0.48	5.18	0.05	0.08	2.78	0.01	0.17	0.32	0.02	9.08
Sum of PM10TW	2008				0.01	0.23	0.00	0.01			0.25
	2012				0.01	0.29	0.00	0.01			0.31
	2014	0.00	0.00	0.00	0.02	0.67	0.00	0.01	0.00	0.00	0.70
	2018				0.02	0.63	0.00	0.02			0.67
	2023	0.00	0.00	0.00	0.02	0.77	0.00	0.03	0.00	0.00	0.83
	2030	0.00	0.00	0.00	0.03	0.85	0.00	0.03	0.00	0.00	0.91
	2036	0.00	0.00	0.00	0.03	0.86	0.00	0.03	0.00	0.00	0.92
	2045	0.00	0.00	0.00	0.03	0.87	0.00	0.03	0.00	0.00	0.93
Sum of PM10BW	2008				0.01	0.39	0.00	0.07			0.47
	2012				0.01	0.51	0.00	0.05			0.57
	2014	0.00	0.00	0.00	0.03	1.15	0.00	0.05	0.00	0.00	1.24
	2018				0.03	1.08	0.00	0.10			1.22
	2023	0.00	0.00	0.00	0.04	1.33	0.00	0.13	0.00	0.00	1.50
	2030	0.00	0.00	0.00	0.04	1.46	0.00	0.14	0.00	0.00	1.65
	2036	0.00	0.00	0.00	0.05	1.48	0.00	0.14	0.00	0.00	1.67
	2045	0.00	0.00	0.00	0.05	1.49	0.00	0.14	0.00	0.00	1.68
Sum of SOx	2008	0.03	44.35	0.02	0.01	0.11	0.00	0.01	0.05	0.00	44.58
	2012	0.03	5.88	0.02	0.01	0.14	0.00	0.00	0.05	0.00	6.15
	2014	0.06	13.82	0.01	0.03	0.31	0.00	0.00	0.05	0.00	14.29
	2018	0.15	8.11	0.00	0.02	0.30	0.00	0.01	0.06	0.00	8.65
	2023	0.09	5.65	0.00	0.03	0.34	0.00	0.01	0.09	0.00	6.22
	2030	0.10	6.87	0.01	0.03	0.32	0.00	0.01	0.09	0.00	7.43
	2036	0.10	6.87	0.01	0.02	0.28	0.00	0.01	0.09	0.00	7.38
	2045	0.10	6.87	0.01	0.02	0.24	0.00	0.01	0.08	0.00	7.33
Sum of CO2	2008	5498.58	2824.82	1727.46	979.29	11330.99	36.99	619.02	4838.32	324.37	28179.83
	2012	7894.78	2684.38	2057.40	1259.35	14065.47	28.02	466.24	4829.40	348.78	33633.82
	2014	14230.38	23184.11	626.34	3244.47	31323.38	26.76	453.29	5161.76	402.39	78652.88
	2018	13774.58	12200.62	0.00	3122.62	29179.93	50.77	772.80	6131.77	380.73	65613.82
	2023	21119.81	8475.65	0.00	3805.71	32771.25	56.13	870.04	8847.72	446.52	76392.83
	2030	23557.88	10303.92	670.02	3624.65	30925.73	51.95	798.97	9265.73	443.63	79642.47
	2036	23572.39	10303.92	670.02	3167.03	27082.87	47.71	730.50	8758.95	439.16	74772.55
	2045	23557.64	10303.92	670.02	2741.51	23920.04	46.73	727.76	8061.64	439.10	70468.36
Sum of CH4	2008	0.40	0.02	0.04	0.12	0.55	0.02	0.03	0.39	0.03	1.61
	2012	0.67	0.02	0.04	0.03	0.13	0.01	0.02	0.39	0.03	1.33
	2014	1.24	0.54	0.01	0.06	0.21	0.01	0.01	0.42	0.03	2.53
	2018	0.47	0.17	0.00	0.06	0.25	0.01	0.01	0.50	0.03	1.50
	2023	1.31	0.07	0.00	0.04	0.06	0.01	0.01	0.72	0.04	2.24
	2030	1.54	0.10	0.01	0.04	0.04	0.01	0.00	0.75	0.04	2.53
	2036	1.34	0.10	0.01	0.04	0.03	0.00	0.00	0.71	0.04	2.28
	2045	0.82	0.10	0.01	0.04	0.03	0.00	0.00	0.65	0.04	1.70
Sum of N2O	2008	0.00	0.17	0.08	0.06	1.92	0.01	0.04	0.13	0.01	2.41
	2012	0.00	0.16	0.09	0.07	2.46	0.00	0.02	0.13	0.01	2.94
	2014	0.00	1.55	0.03	0.16	5.52	0.00	0.02	0.14	0.01	7.42
	2018	0.00	0.85	0.00	0.15	5.19	0.01	0.02	0.16	0.01	6.40
	2023	0.00	0.49	0.00	0.19	6.14	0.01	0.01	0.23	0.01	7.08
	2030	0.00	0.57	0.03	0.17	5.64	0.00	0.01	0.24	0.01	6.69
	2036	0.00	0.57	0.03	0.15	4.89	0.00	0.01	0.23	0.01	5.90
	2045	0.00	0.57	0.03	0.13	4.21	0.00	0.01	0.21	0.01	5.18
Sum of DPM	2008	0.48	2.83	1.74	0.46	3.96	0.00	0.00	2.50	0.16	12.15
	2012	0.45	0.89	0.98	0.02	0.52	0.00	0.00	1.96	0.13	4.96
	2014	0.07	6.66	0.27	0.01	0.28	0.00	0.00	1.76	0.12	9.17
	2018	0.12	3.15	0.00	0.00	0.07	0.00	0.00	1.77	0.09	5.22
	2023	0.16	1.92	0.00	0.00	0.03	0.00	0.00	1.87	0.09	4.07
	2030	0.11	4.68	0.06	0.00	0.03	0.00	0.00	1.22	0.06	6.14
	2036	0.16	4.68	0.07	0.00	0.03	0.00	0.00	0.69	0.03	5.65
	2045	0.21	4.68	0.05	0.00	0.02	0.00	0.00	0.32	0.02	5.29

Table B1-668. Peak hour FEIR Mitigated Scenario different type of PM10 emissions by Fuel Type and Source Category in lbs/hr

Source category	Fuel	Year	PM10exh,tire,brk	PM10fugdust	DPM
CHE	Diesel	2008	0.5		0.5
		2012	0.5		0.5
		2014	0.1	0.0	0.1
		2018	0.1		0.1
		2023	0.2	0.0	0.2
		2030	0.1	0.0	0.1
		2036	0.2	0.0	0.2
		2045	0.2	0.0	0.2
	LPG	2008	0.3		0.0
		2012	0.4		0.0
		2014	0.7	0.0	0.0
OGV	MDO/MGO	2008	3.9		2.8
		2012	1.0		0.9
		2014	7.4	0.0	6.7
		2018	3.6		3.1
		2023	2.4	0.0	1.9
		2030	5.2	0.0	4.7
		2036	5.2	0.0	4.7
		2045	5.2	0.0	4.7
Harbor Craft	MDO/MGO	2008	1.7		1.7
		2012	1.0		1.0
		2014	0.3	0.0	0.3
		2018	0.0		0.0
		2023	0.0	0.0	0.0
		2030	0.1	0.0	0.1
		2036	0.1	0.0	0.1
		2045	0.1	0.0	0.1
Onsite Trucks	Diesel	2008	0.5	0.6	0.5
		2012	0.0	0.7	0.0
		2014	0.0	1.6	0.0
		2018	0.0	0.0	0.0
		2023	0.0	2.0	0.0
		2030	0.0	2.2	0.0
		2036	0.0	2.2	0.0
		2045	0.0	2.2	0.0
	95% LNG+5% Diesel	2008	0.0	0.0	0.0
		2012	0.0	0.1	0.0
		2014	0.1	0.1	0.0
		2018	0.1	1.7	0.0
		2023	0.1	0.2	0.0
		2030	0.1	0.2	0.0
		2036	0.1	0.2	0.0
		2045	0.1	0.2	0.0
Offsite Trucks	LNG+Diesel	2008	4.6	0.5	4.0
		2012	1.8	0.6	0.5
		2014	2.7	1.4	0.3
		2018	3.2	1.3	0.1
		2023	2.7	1.5	0.0
		2030	2.9	1.7	0.0
		2036	2.9	1.7	0.0
		2045	2.8	1.7	0.0
Onsite PC	Diesel/Gas/Elec	2008	0.0	0.0	0.0
		2012	0.0	0.0	0.0
		2014	0.0	0.0	0.0
		2018	0.0	0.0	0.0
		2023	0.0	0.0	0.0
		2030	0.0	0.0	0.0
		2036	0.0	0.0	0.0
		2045	0.0	0.0	0.0
Offsite PC	Diesel/Gas/Elec	2008	0.1	0.1	0.0
		2012	0.1	0.1	0.0
		2014	0.1	0.1	0.0
		2018	0.1	0.2	0.0
		2023	0.2	0.2	0.0
		2030	0.2	0.3	0.0
		2036	0.2	0.3	0.0
		2045	0.2	0.3	0.0
Rail Offsite	Diesel	2008	2.5		2.5
		2012	2.0		2.0
		2014	1.8	0.0	1.8
		2018	1.8		1.8
		2023	1.9	0.0	1.9
		2030	1.2	0.0	1.2
		2036	0.7	0.0	0.7
		2045	0.3	0.0	0.3
Rail Onsite	Diesel	2008	0.2		0.2
		2012	0.1		0.1
		2014	0.1	0.0	0.1
		2018	0.1		0.1
		2023	0.1	0.0	0.1
		2030	0.1	0.0	0.1
		2036	0.0	0.0	0.0
		2045	0.0	0.0	0.0
Grand Total			78.5	26.7	52.6

Emissions Inventory with Proposed Mitigations (Revised Project)

Table B1-669. Proposed Mitigated Scenario AnnualEmissions by Source Category and Analyis Year in ton/year

		Source category									
Values	**Year**	**CHE**	**OGV**	**Harbor Craft**	**Onsite Trucks**	**Offsite Trucks**	**Onsite PC**	**Offsite PC**	**Rail Offsite**	**Rail Onsite**	**Grand Total**
Sum of NOx	2008	40.94	54.78	1.05	15.66	171.71	0.09	0.73	199.50	13.08	497.57
	2012	80.30	75.81	0.71	15.61	108.02	0.07	0.49	176.47	12.06	469.55
	2014	168.10	198.83	2.06	33.28	213.86	0.06	0.35	171.44	12.59	800.57
	2018	133.29	311.07	0.99	32.48	206.41	0.08	0.30	202.64	11.65	898.90
	2023	59.06	293.55	0.93	22.58	110.17	0.06	0.19	243.95	11.96	742.46
	2030	6.91	236.19	0.99	25.62	96.31	0.05	0.13	177.25	8.50	551.94
	2036	7.52	153.50	1.04	25.84	88.85	0.04	0.11	114.60	5.98	397.47
	2045	7.03	67.48	0.94	25.84	97.57	0.04	0.11	62.08	3.81	264.89
Sum of VOC	2008	4.05	2.77	0.08	2.69	10.92	0.12	0.24	10.43	0.69	31.98
	2012	14.21	4.75	0.07	0.96	3.33	0.10	0.15	8.71	0.60	32.88
	2014	30.06	7.32	0.19	1.85	5.41	0.07	0.11	7.52	0.56	53.09
	2018	33.91	16.86	0.11	1.89	6.17	0.09	0.08	7.69	0.46	67.27
	2023	37.80	10.07	0.12	1.32	1.47	0.07	0.04	8.74	0.44	60.08
	2030	6.25	18.50	0.13	1.40	1.03	0.04	0.02	6.10	0.31	33.79
	2036	8.55	18.56	0.14	1.39	0.80	0.03	0.01	3.88	0.22	33.58
	2045	6.75	18.56	0.12	1.38	0.73	0.02	0.01	2.27	0.15	30.00
Sum of CO	2008	97.13	4.00	0.30	7.37	42.73	0.84	7.74	35.23	2.37	197.71
	2012	223.02	8.49	0.41	3.61	11.31	0.68	5.54	37.61	2.73	293.39
	2014	480.06	11.67	1.14	8.40	15.36	0.55	4.17	38.60	3.03	562.99
	2018	448.63	23.58	2.30	8.95	19.11	0.83	4.37	45.12	2.82	555.71
	2023	297.50	18.09	2.32	18.30	6.82	0.84	3.45	67.95	3.44	418.72
	2030	80.74	36.14	2.49	20.33	7.30	0.72	2.85	71.16	3.42	225.17
	2036	84.82	36.22	2.64	20.43	7.35	0.64	2.59	67.27	3.38	225.34
	2045	81.71	36.22	2.34	20.43	8.37	0.60	2.57	61.92	3.38	217.54
Sum of PM25	2008	0.95	3.20	0.04	0.60	5.30	0.00	0.05	6.45	0.42	17.02
	2012	1.96	1.73	0.02	0.09	2.27	0.00	0.05	5.47	0.35	11.95
	2014	2.07	3.04	0.07	0.09	2.48	0.00	0.05	4.72	0.33	12.86
	2018	1.65	4.00	0.02	0.11	3.39	0.00	0.09	4.65	0.25	14.16
	2023	1.32	3.80	0.02	0.06	2.19	0.00	0.11	5.16	0.24	12.90
	2030	0.34	5.42	0.02	0.06	2.32	0.00	0.12	3.43	0.16	11.87
	2036	0.40	5.43	0.03	0.06	2.26	0.00	0.11	1.99	0.10	10.38
	2045	0.36	5.43	0.02	0.06	2.11	0.00	0.12	0.94	0.05	9.09
Sum of PM10	2008	1.01	4.00	0.05	0.64	6.05	0.00	0.12	7.04	0.45	19.35
	2012	2.07	1.88	0.03	0.12	3.25	0.00	0.12	5.90	0.38	13.75
	2014	2.14	3.34	0.08	0.15	4.53	0.00	0.12	5.07	0.35	15.78
	2018	1.71	4.32	0.02	0.17	5.32	0.01	0.21	5.04	0.27	17.07
	2023	1.36	4.11	0.02	0.13	4.48	0.01	0.27	5.54	0.26	16.17
	2030	0.37	5.87	0.02	0.14	4.83	0.01	0.29	3.61	0.16	15.30
	2036	0.43	5.88	0.03	0.14	4.80	0.01	0.28	2.05	0.10	13.72
	2045	0.38	5.88	0.02	0.14	4.66	0.01	0.29	0.94	0.05	12.37
Sum of PM10TW	2008				0.01	0.30	0.00	0.02			0.33
	2012				0.01	0.52	0.00	0.02			0.56
	2014	0.00	0.00	0.00	0.03	1.15	0.00	0.02	0.00	0.00	1.20
	2018				0.03	1.05	0.00	0.04			1.12
	2023		0.00	0.00	0.04	1.30	0.00	0.05	0.00	0.00	1.39
	2030		0.00	0.00	0.04	1.43	0.00	0.05	0.00	0.00	1.52
	2036		0.00	0.00	0.04	1.45	0.00	0.05	0.00	0.00	1.54
	2045		0.00	0.00	0.04	1.46	0.00	0.05	0.00	0.00	1.55
Sum of PM10BW	2008				0.02	0.52	0.00	0.09			0.62
	2012				0.02	0.90	0.00	0.09			1.02
	2014	0.00	0.00	0.00	0.06	1.97	0.00	0.09	0.00	0.00	2.12
	2018				0.05	1.81	0.01	0.16			2.03
	2023		0.00	0.00	0.07	2.23	0.01	0.21	0.00	0.00	2.51
	2030		0.00	0.00	0.08	2.45	0.01	0.23	0.00	0.00	2.76
	2036		0.00	0.00	0.08	2.49	0.01	0.23	0.00	0.00	2.80
	2045		0.00	0.00	0.08	2.50	0.01	0.23	0.00	0.00	2.81
Sum of SOx	2008	0.03	43.14	0.00	0.01	0.15	0.00	0.01	0.14	0.01	43.49
	2012	0.08	8.13	0.00	0.02	0.25	0.00	0.01	0.15	0.01	8.65
	2014	0.15	7.52	0.00	0.04	0.54	0.00	0.01	0.15	0.01	8.42
	2018	0.12	9.89	0.00	0.04	0.49	0.00	0.01	0.18	0.01	10.74
	2023	0.16	8.91	0.00	0.05	0.58	0.00	0.01	0.26	0.01	10.00
	2030	0.18	9.04	0.00	0.05	0.53	0.00	0.01	0.28	0.01	10.10
	2036	0.18	9.05	0.00	0.04	0.46	0.00	0.01	0.26	0.01	10.02
	2045	0.18	9.05	0.00	0.04	0.40	0.00	0.01	0.24	0.01	9.93
Sum of CO2	2008	7267.02	2602.41	45.21	1294.26	14975.26	48.89	818.11	13597.00	911.57	41559.73
	2012	15997.42	4010.63	53.38	2244.12	25063.94	49.93	830.81	14512.34	1048.07	63810.64
	2014	28116.33	13010.84	147.82	5541.12	53495.69	45.70	774.16	14896.86	1161.31	117189.84
	2018	22783.62	14896.99	290.79	5212.30	48706.91	84.74	1289.95	17408.67	1080.94	111754.91
	2023	32844.38	13424.38	281.10	6377.40	54915.88	94.05	1457.95	26219.68	1323.23	136938.07
	2030	33403.23	13613.55	281.10	6073.99	51823.29	87.05	1338.86	27458.44	1314.66	135394.17
	2036	33431.77	13626.87	281.10	5307.14	45383.67	79.94	1224.13	25956.64	1301.43	126592.70
	2045	33455.38	13626.87	281.10	4594.07	40083.61	78.30	1219.53	23890.20	1301.26	118530.33
Sum of CH4	2008	0.53	0.03	0.00	0.16	0.73	0.02	0.05	1.10	0.07	2.69
	2012	1.45	0.05	0.00	0.05	0.22	0.02	0.03	1.17	0.08	3.08
	2014	2.98	0.15	0.00	0.10	0.36	0.01	0.02	1.21	0.09	4.93
	2018	2.84	0.17	0.01	0.11	0.41	0.02	0.02	1.41	0.09	5.07
	2023	12.25	0.18	0.01	0.06	0.10	0.02	0.01	2.12	0.11	14.86
	2030	19.84	0.18	0.01	0.07	0.07	0.01	0.01	2.22	0.11	22.51
	2036	19.83	0.18	0.01	0.07	0.05	0.01	0.00	2.10	0.10	22.35
	2045	19.57	0.18	0.01	0.07	0.05	0.01	0.00	1.93	0.10	21.92
Sum of N2O	2008	0.00	0.17	0.00	0.08	2.54	0.01	0.05	0.36	0.02	3.24
	2012	0.00	0.23	0.00	0.12	4.39	0.01	0.04	0.38	0.03	5.19
	2014	0.00	0.87	0.01	0.27	9.42	0.01	0.03	0.39	0.03	11.02
	2018	0.00	1.00	0.01	0.25	8.67	0.01	0.03	0.46	0.03	10.46
	2023	0.00	0.87	0.01	0.32	10.28	0.01	0.02	0.69	0.03	12.24
	2030	0.00	0.78	0.01	0.29	9.45	0.01	0.02	0.72	0.03	11.31
	2036	0.00	0.78	0.01	0.25	8.20	0.01	0.02	0.68	0.03	9.98
	2045	0.00	0.78	0.01	0.21	7.05	0.01	0.02	0.63	0.03	8.75
Sum of DPM	2008	0.64	3.11	0.05	0.61	5.23	0.00	0.00	7.04	0.45	17.13
	2012	1.35	1.79	0.03	0.07	1.65	0.00	0.00	5.90	0.38	11.17
	2014	0.92	2.48	0.08	0.06	1.31	0.00	0.00	5.07	0.35	10.27
	2018	0.71	3.41	0.02	0.08	2.26	0.00	0.00	5.04	0.27	11.79
	2023	0.58	3.50	0.02	0.02	0.88	0.00	0.00	5.54	0.26	10.79
	2030	0.30	5.27	0.02	0.02	0.88	0.00	0.00	3.61	0.16	10.27
	2036	0.36	5.28	0.03	0.02	0.80	0.00	0.00	2.05	0.10	8.63
	2045	0.31	5.28	0.02	0.02	0.65	0.00	0.00	0.94	0.05	7.28

Table B1-670. Annual Proposed Mitigated Scenario different type of PM10 emissions by Fuel Type and Source Category in ton/year

Source category	Fuel	Year	PM10exh,tire,brk	PM10fugdust	DPM
CHE	Diesel	2008	0.6		0.6
		2012	1.3		1.3
		2014	0.9	0.0	0.9
		2018	0.7		0.7
		2023	0.6		0.6
		2030	0.3		0.3
		2036	0.4		0.4
		2045	0.3		0.3
	LPG	2008	0.4		0.0
		2012	0.7		0.0
		2014	1.2	0.0	0.0
		2018	1.0		0.0
		2023	0.7		0.0
OGV	MGO/MDO	2008	4.0		3.1
		2012	1.9		1.8
		2014	3.3	0.0	2.5
		2018	4.3		3.4
		2023	4.1	0.0	3.5
		2030	5.9	0.0	5.3
		2036	5.9	0.0	5.3
		2045	5.9	0.0	5.3
Harbor Craft	MGO/MDO	2008	0.0		0.0
		2012	0.0		0.0
		2014	0.1	0.0	0.1
		2018	0.0		0.0
		2023	0.0	0.0	0.0
		2030	0.0	0.0	0.0
		2036	0.0	0.0	0.0
		2045	0.0	0.0	0.0
Onsite Trucks	Diesel	2008	0.6	0.9	0.6
		2012	0.1	1.2	0.1
		2014	0.1	2.7	0.1
		2018	0.2	0.0	0.1
		2023	0.1	3.3	0.0
		2030	0.1	3.7	0.0
		2036	0.1	3.7	0.0
		2045	0.1	3.7	0.0
	95% LNG+5% Diesel	2008	0.0	0.0	0.0
		2012	0.0	0.1	0.0
		2014	0.0	0.2	0.0
		2018	0.0	2.8	0.0
		2023	0.0	0.3	0.0
		2030	0.0	0.3	0.0
		2036	0.0	0.3	0.0
		2045	0.0	0.3	0.0
Offsite Trucks	LNG+Diesel	2008	6.0	0.6	5.2
		2012	3.3	1.1	1.6
		2014	4.5	2.4	1.3
		2018	5.3	2.2	2.3
		2023	4.5	2.6	0.9
		2030	4.8	2.9	0.9
		2036	4.8	2.9	0.8
		2045	4.7	2.9	0.7
Onsite PC	Diesel/Gas/Elec	2008	0.0	0.0	0.0
		2012	0.0	0.0	0.0
		2014	0.0	0.0	0.0
		2018	0.0	0.1	0.0
		2023	0.0	0.1	0.0
		2030	0.0	0.1	0.0
		2036	0.0	0.1	0.0
		2045	0.0	0.1	0.0
Offsite PC	Diesel/Gas/Elec	2008	0.1	0.2	0.0
		2012	0.1	0.2	0.0
		2014	0.1	0.2	0.0
		2018	0.2	0.4	0.0
		2023	0.3	0.4	0.0
		2030	0.3	0.5	0.0
		2036	0.3	0.5	0.0
		2045	0.3	0.5	0.0
Rail Offsite	Diesel	2008	7.0		7.0
		2012	5.9		5.9
		2014	5.1	0.0	5.1
		2018	5.0		5.0
		2023	5.5	0.0	5.5
		2030	3.6	0.0	3.6
		2036	2.1	0.0	2.1
		2045	0.9	0.0	0.9
Rail Onsite	Diesel	2008	0.5		0.5
		2012	0.4		0.4
		2014	0.4	0.0	0.4
		2018	0.3		0.3
		2023	0.3	0.0	0.3
		2030	0.2	0.0	0.2
		2036	0.1	0.0	0.1
		2045	0.1	0.0	0.1
Grand Total			**123.3**	**44.5**	**87.3**

Table B1-671. Proposed Mitigated Scenario Peakday Emissions by Source Category and Analysis Year in lbs/day

		Source category									
Values	**Year**	**CHE**	**OGV**	**Harbor Craft**	**Onsite Trucks**	**Offsite Trucks**	**Onsite PC**	**Offsite PC**	**Rail Offsite**	**Rail Onsite**	**Grand Total**
Sum of NOx	2008	349.67	1,138.36	40.27	133.70	1,466.46	0.80	6.26	1,703.78	111.75	4,951.05
	2012	641.36	1,005.53	27.26	124.69	862.76	0.59	3.94	1,409.41	96.32	4,171.85
	2014	1,397.95	5,029.09	48.56	276.74	1,778.48	0.47	2.88	1,425.72	104.71	10,064.60
	2018	1,126.77	4,238.71	20.26	274.53	1,744.86	0.64	2.57	1,713.03	98.44	9,219.81
	2023	478.35	5,622.88	19.94	182.88	892.23	0.52	1.54	1,975.64	96.84	9,270.82
	2030	55.96	4,594.11	21.11	207.46	779.95	0.41	1.02	1,435.51	68.85	7,164.38
	2036	60.88	2,991.53	22.12	209.23	719.56	0.36	0.87	928.14	48.43	4,981.13
	2045	56.90	1,287.99	20.04	209.24	790.22	0.36	0.86	502.73	30.84	2,899.18
Sum of VOC	2008	34.55	61.90	2.89	22.96	93.22	1.04	2.03	89.08	5.92	313.60
	2012	113.49	69.13	2.55	7.65	26.58	0.77	1.23	69.60	4.79	295.78
	2014	249.95	241.55	4.56	15.36	44.96	0.62	0.89	62.53	4.69	625.12
	2018	286.65	301.10	2.28	15.98	52.12	0.78	0.72	65.02	3.91	728.57
	2023	306.12	193.20	2.47	10.70	11.89	0.56	0.36	70.78	3.60	599.68
	2030	50.61	371.96	2.74	11.37	8.32	0.36	0.18	49.44	2.50	497.48
	2036	69.25	371.96	2.98	11.23	6.50	0.25	0.12	31.45	1.76	495.49
	2045	54.67	371.96	2.48	11.16	5.93	0.19	0.09	18.42	1.23	466.13
Sum of CO	2008	829.48	70.44	11.47	62.92	364.94	7.17	66.11	300.90	20.23	1733.64
	2012	1781.17	125.22	15.68	28.83	90.35	5.44	44.21	300.35	21.79	2413.05
	2014	3992.15	334.25	26.95	69.87	127.77	4.61	34.66	321.03	25.16	4936.44
	2018	3792.45	155.03	47.00	75.66	161.55	7.03	36.95	381.41	23.84	4680.92
	2023	2409.37	340.30	49.57	148.21	55.20	6.81	27.98	550.34	27.88	3615.66
	2030	653.92	716.36	53.22	164.65	59.11	5.84	23.11	576.34	27.69	2280.26
	2036	686.97	716.36	56.35	165.45	59.55	5.16	20.96	544.81	27.40	2283.01
	2045	661.75	716.36	50.02	165.45	67.80	4.85	20.78	501.45	27.40	2215.86
Sum of PM25	2008	8.15	86.70	1.60	5.09	45.26	0.02	0.43	55.09	3.56	205.91
	2012	15.65	28.88	0.90	0.72	18.11	0.02	0.40	43.65	2.83	111.16
	2014	17.18	82.53	1.66	0.77	20.66	0.02	0.40	39.28	2.72	165.21
	2018	13.95	45.74	0.45	0.95	28.64	0.03	0.73	39.28	2.10	131.87
	2023	10.68	70.51	0.41	0.46	17.73	0.04	0.89	41.79	1.96	144.46
	2030	2.78	105.93	0.48	0.50	18.81	0.04	0.95	27.75	1.26	158.49
	2036	3.22	105.93	0.54	0.49	18.29	0.04	0.92	16.15	0.79	146.37
	2045	2.88	105.93	0.42	0.49	17.11	0.03	0.93	7.63	0.43	135.85
Sum of PM10	2008	8.59	107.78	1.74	5.45	51.66	0.04	0.99	60.10	3.88	240.24
	2012	16.51	31.22	0.98	0.95	25.99	0.03	0.96	47.15	3.06	126.85
	2014	17.79	90.34	1.80	1.26	37.66	0.03	0.96	42.13	2.91	194.90
	2018	14.44	49.49	0.49	1.43	44.97	0.07	1.76	42.57	2.28	157.49
	2023	11.05	76.32	0.45	1.02	36.25	0.08	2.16	44.84	2.10	174.27
	2030	2.98	114.70	0.52	1.12	39.12	0.08	2.33	29.22	1.32	191.39
	2036	3.45	114.70	0.59	1.11	38.90	0.08	2.28	16.61	0.81	178.54
	2045	3.08	114.70	0.45	1.11	37.75	0.08	2.32	7.64	0.43	167.56
Sum of PM10TW	2008				0.08	2.58	0.00	0.16			2.83
	2012				0.12	4.19	0.00	0.16			4.48
	2014	0.00	0.00	0.00	0.27	9.53	0.00	0.17	0.00	0.00	9.97
	2018				0.26	8.92	0.01	0.30			9.49
	2023		0.00	0.00	0.32	10.51	0.01	0.38	0.00	0.00	11.22
	2030		0.00	0.00	0.36	11.55	0.01	0.41	0.00	0.00	12.32
	2036		0.00	0.00	0.36	11.74	0.01	0.40	0.00	0.00	12.51
	2045		0.00	0.00	0.36	11.79	0.01	0.41	0.00	0.00	12.57
Sum of PM10BW	2008				0.14	4.42	0.02	0.75			5.34
	2012				0.20	7.19	0.02	0.75			8.16
	2014	0.00	0.00	0.00	0.47	16.34	0.02	0.76	0.00	0.00	17.60
	2018				0.45	15.29	0.05	1.39			17.18
	2023		0.00	0.00	0.55	18.03	0.06	1.72	0.00	0.00	20.36
	2030		0.00	0.00	0.61	19.80	0.06	1.87	0.00	0.00	22.35
	2036		0.00	0.00	0.61	20.13	0.06	1.85	0.00	0.00	22.65
	2045		0.00	0.00	0.61	20.21	0.06	1.88	0.00	0.00	22.77
Sum of SOx	2008	0.28	1154.16	0.02	0.08	1.27	0.00	0.07	1.17	0.08	1157.14
	2012	0.64	155.04	0.02	0.14	2.02	0.00	0.07	1.17	0.08	159.17
	2014	1.21	156.06	0.04	0.37	4.46	0.00	0.06	1.25	0.10	163.55
	2018	0.98	112.05	0.06	0.35	4.16	0.01	0.11	1.49	0.09	119.29
	2023	1.30	164.98	0.06	0.38	4.67	0.01	0.12	2.14	0.11	173.78
	2030	1.43	170.01	0.06	0.38	4.30	0.01	0.11	2.25	0.11	178.65
	2036	1.43	170.01	0.06	0.33	3.74	0.01	0.10	2.12	0.11	177.92
	2045	1.43	170.01	0.06	0.29	3.22	0.01	0.10	1.95	0.11	177.18
Sum of CO2	2008	62061.03	73496.74	1727.46	11052.99	127890.05	417.55	6986.72	116119.66	7784.91	407537.12
	2012	127766.54	70776.17	2057.40	17922.93	200178.19	398.80	6635.45	115905.70	8370.60	550011.77
	2014	233815.08	310793.00	3484.09	46079.50	444869.51	380.07	6437.90	123882.15	9657.47	1179398.77
	2018	192599.11	168434.43	5953.72	44061.26	411739.09	716.31	10904.47	147162.48	9137.63	990708.51
	2023	265996.60	248313.50	6004.67	51648.23	444746.93	761.72	11807.49	212345.16	10716.45	1252340.74
	2030	270522.55	255881.61	6004.67	49190.99	419700.93	705.01	10843.01	222377.46	10647.02	1245873.25
	2036	270753.71	255881.61	6004.67	42980.52	367548.42	647.44	9913.84	210214.91	10539.86	1174484.99
	2045	270944.85	255881.61	6004.67	37205.67	324624.92	634.12	9876.62	193479.44	10538.51	1109190.42
Sum of CH4	2008	4.52	0.58	0.04	1.39	6.26	0.19	0.39	9.40	0.63	23.40
	2012	11.57	0.60	0.04	0.44	1.79	0.15	0.25	9.38	0.67	24.88
	2014	24.75	4.59	0.07	0.86	3.02	0.12	0.18	10.03	0.77	44.40
	2018	24.01	1.80	0.12	0.91	3.50	0.16	0.17	11.91	0.73	43.32
	2023	99.24	3.33	0.12	0.52	0.80	0.13	0.10	17.19	0.86	122.29
	2030	160.70	3.40	0.12	0.54	0.56	0.09	0.05	18.00	0.86	184.32
	2036	160.58	3.40	0.12	0.53	0.44	0.07	0.04	17.01	0.85	183.04
	2045	158.45	3.40	0.12	0.53	0.40	0.05	0.03	15.66	0.85	179.50
Sum of N2O	2008	0.00	4.47	0.08	0.67	21.73	0.06	0.42	3.06	0.20	30.68
	2012	0.00	4.06	0.09	0.97	35.05	0.05	0.28	3.05	0.22	43.78
	2014	0.00	19.02	0.16	2.25	78.35	0.04	0.22	3.26	0.25	103.55
	2018	0.00	11.34	0.27	2.15	73.30	0.07	0.24	3.87	0.24	91.49
	2023	0.00	15.96	0.27	2.55	83.29	0.07	0.19	5.59	0.28	108.21
	2030	0.00	14.24	0.27	2.37	76.49	0.06	0.16	5.85	0.28	99.72
	2036	0.00	14.24	0.27	2.03	66.37	0.06	0.14	5.53	0.28	88.92
	2045	0.00	14.24	0.27	1.74	57.12	0.06	0.15	5.09	0.28	78.94
Sum of DPM	2008	5.47	82.81	1.74	5.24	44.65	0.00	0.00	60.10	3.88	203.89
	2012	10.78	29.50	0.98	0.57	13.17	0.00	0.00	47.15	3.06	105.21
	2014	7.69	76.37	1.80	0.48	10.87	0.00	0.00	42.13	2.91	142.26
	2018	6.01	39.31	0.49	0.66	19.14	0.00	0.00	42.57	2.28	110.46
	2023	4.70	65.99	0.45	0.14	7.11	0.00	0.00	44.84	2.10	125.32
	2030	2.42	104.66	0.52	0.14	7.17	0.00	0.00	29.22	1.32	145.45
	2036	2.90	104.66	0.59	0.13	6.49	0.00	0.00	16.61	0.81	132.19
	2045	2.52	104.66	0.45	0.13	5.30	0.00	0.00	7.64	0.43	121.14

Table B1-672. Peakday Proposed Mitigated Scenario different type of PM10 emissions by Fuel Type and Source Category in lbs/day

Source category	Fuel	Year	PM10exh,tire,brk	PM10fugdust	DPM
CHE	Diesel	2008	5.5		5.5
		2012	10.8		10.8
		2014	7.7	0.0	7.7
		2018	6.0		6.0
		2023	4.7		4.7
		2030	2.4		2.4
		2036	2.9		2.9
		2045	2.5		2.5
	LPG	2008	3.1		0.0
		2012	5.7		0.0
		2014	10.1	0.0	0.0
		2018	8.4		0.0
		2023	6.1		0.0
OGV	MDO/MGO	2008	107.8		82.8
		2012	31.2		29.5
		2014	90.3	0.0	76.4
		2018	49.5		39.3
		2023	76.3	0.0	66.0
		2030	114.7	0.0	104.7
		2036	114.7	0.0	104.7
		2045	114.7	0.0	104.7
Harbor Craft	MDO/MGO	2008	1.7		1.7
		2012	1.0		1.0
		2014	1.8	0.0	1.8
		2018	0.5		0.5
		2023	0.4	0.0	0.4
		2030	0.5	0.0	0.5
		2036	0.6	0.0	0.6
		2045	0.5	0.0	0.5
Onsite Trucks	Diesel	2008	5.5	7.3	5.2
		2012	0.9	9.5	0.6
		2014	1.2	22.7	0.5
		2018	1.3	0.0	0.7
		2023	0.9	26.9	0.1
		2030	1.0	29.9	0.1
		2036	1.0	30.1	0.1
		2045	1.0	30.2	0.1
	95% LNG+5% Diesel	2008	0.0	0.0	0.0
		2012	0.1	1.1	0.0
		2014	0.1	2.0	0.0
		2018	0.1	23.8	0.0
		2023	0.1	2.4	0.0
		2030	0.1	2.7	0.0
		2036	0.1	2.7	0.0
		2045	0.1	2.7	0.0
Offsite Trucks	LNG+Diesel	2008	51.7	5.3	44.7
		2012	26.0	8.5	13.2
		2014	37.7	20.0	10.9
		2018	45.0	18.5	19.1
		2023	36.3	20.9	7.1
		2030	39.1	23.1	7.2
		2036	38.9	23.7	6.5
		2045	37.8	23.6	5.3
Onsite PC	Diesel/Gas/Elec	2008	0.0	0.2	0.0
		2012	0.0	0.2	0.0
		2014	0.0	0.2	0.0
		2018	0.1	0.5	0.0
		2023	0.1	0.6	0.0
		2030	0.1	0.7	0.0
		2036	0.1	0.7	0.0
		2045	0.1	0.7	0.0
Offsite PC	Diesel/Gas/Elec	2008	1.0	1.6	0.0
		2012	1.0	1.6	0.0
		2014	1.0	1.7	0.0
		2018	1.8	3.0	0.0
		2023	2.2	3.4	0.0
		2030	2.3	3.8	0.0
		2036	2.3	3.8	0.0
		2045	2.3	3.9	0.0
Rail Offsite	Diesel	2008	60.1		60.1
		2012	47.2		47.2
		2014	42.1	0.0	42.1
		2018	42.6		42.6
		2023	44.8	0.0	44.8
		2030	29.2	0.0	29.2
		2036	16.6	0.0	16.6
		2045	7.6	0.0	7.6
Rail Onsite	Diesel	2008	3.9		3.9
		2012	3.1		3.1
		2014	2.9	0.0	2.9
		2018	2.3		2.3
		2023	2.1	0.0	2.1
		2030	1.3	0.0	1.3
		2036	0.8	0.0	0.8
		2045	0.4	0.0	0.4
Grand Total			**1429.3**	**363.9**	**1085.9**

Table B1-673. Proposed Mitigated Scenario Peak 8hr Emissions by Source Category and Analysis Year in lbs/8-hr

		Source category									
Values	**Year**	**CHE**	**OGV**	**Harbor Craft**	**Onsite Trucks**	**Offsite Trucks**	**Onsite PC**	**Offsite PC**	**Rail Offsite**	**Rail Onsite**	**Grand Total**
Sum of NOx	2008	216.58	645.31	40.27	82.81	908.30	0.50	3.88	567.93	37.25	2,502.83
	2012	315.34	519.38	27.26	61.31	424.20	0.29	1.94	469.80	32.11	1,851.62
	2014	684.47	3,663.32	7.71	135.50	870.79	0.23	1.41	475.24	34.90	5,873.56
	2018	555.60	2,842.78	11.07	135.37	860.38	0.32	1.27	571.01	32.81	5,010.60
	2023	253.39	1,802.74	7.17	96.88	472.63	0.27	0.82	658.55	32.28	3,324.73
	2030	29.64	1,634.52	6.08	109.89	413.15	0.21	0.54	478.50	22.95	2,695.50
	2036	32.25	947.69	6.37	110.84	381.16	0.19	0.46	309.38	16.14	1,804.49
	2045	30.14	519.11	5.77	110.84	418.59	0.19	0.46	167.58	10.28	1,262.95
Sum of VOC	2008	21.40	44.98	2.89	14.22	57.74	0.65	1.26	29.69	1.97	174.81
	2012	55.80	45.80	2.55	3.76	13.07	0.38	0.60	23.20	1.60	146.76
	2014	122.38	181.09	0.84	7.52	22.01	0.30	0.44	20.84	1.56	357.00
	2018	141.35	218.65	1.25	7.88	25.70	0.38	0.35	21.67	1.30	418.55
	2023	162.16	54.67	0.89	5.67	6.30	0.30	0.19	23.59	1.20	254.96
	2030	26.81	161.06	0.79	6.02	4.41	0.19	0.10	16.48	0.83	216.69
	2036	36.68	161.06	0.86	5.95	3.44	0.13	0.06	10.48	0.59	219.26
	2045	28.96	161.06	0.72	5.91	3.14	0.10	0.05	6.14	0.41	206.49
Sum of CO	2008	513.77	29.09	11.47	38.97	226.04	4.44	40.95	100.30	6.74	971.77
	2012	875.77	71.91	15.68	14.18	44.42	2.68	21.74	100.12	7.26	1153.75
	2014	1954.65	209.65	4.94	34.21	62.56	2.26	16.97	107.01	8.39	2400.63
	2018	1870.03	79.87	25.68	37.31	79.66	3.47	18.22	127.14	7.95	2249.31
	2023	1276.28	85.54	17.83	78.51	29.24	3.61	14.82	183.45	9.29	1698.58
	2030	346.39	293.64	15.33	87.22	31.31	3.10	12.24	192.11	9.23	990.58
	2036	363.90	293.64	16.23	87.64	31.54	2.73	11.10	181.60	9.13	997.53
	2045	350.54	293.64	14.40	87.64	35.91	2.57	11.01	167.15	9.13	972.00
Sum of PM25	2008	5.05	36.83	1.60	3.15	28.03	0.01	0.27	18.36	1.19	94.51
	2012	7.69	14.58	0.90	0.36	8.90	0.01	0.20	14.55	0.94	48.14
	2014	8.41	52.57	0.25	0.38	10.12	0.01	0.20	13.09	0.91	85.92
	2018	6.88	24.12	0.25	0.47	14.12	0.02	0.36	13.09	0.70	60.01
	2023	5.66	21.96	0.15	0.24	9.39	0.02	0.47	13.93	0.65	52.47
	2030	1.47	44.17	0.14	0.26	9.96	0.02	0.50	9.25	0.42	66.20
	2036	1.71	44.17	0.16	0.26	9.69	0.02	0.49	5.38	0.26	62.13
	2045	1.53	44.17	0.12	0.26	9.06	0.02	0.49	2.54	0.14	58.34
Sum of PM10	2008	5.32	45.82	1.74	3.38	32.00	0.02	0.61	20.03	1.29	110.22
	2012	8.12	15.78	0.98	0.47	12.78	0.02	0.47	15.72	1.02	55.35
	2014	8.71	57.25	0.27	0.62	18.44	0.02	0.47	14.04	0.97	100.80
	2018	7.12	26.11	0.27	0.70	22.17	0.03	0.87	14.19	0.76	72.22
	2023	5.86	23.76	0.16	0.54	19.20	0.04	1.14	14.95	0.70	66.35
	2030	1.58	47.83	0.15	0.59	20.72	0.04	1.23	9.74	0.44	82.33
	2036	1.83	47.83	0.17	0.59	20.60	0.04	1.21	5.54	0.27	78.08
	2045	1.63	47.83	0.13	0.59	20.00	0.04	1.23	2.55	0.14	74.14
Sum of PM10TW	2008				0.05	1.60	0.00	0.10			1.75
	2012				0.06	2.06	0.00	0.08			2.20
	2014	0.00	0.00	0.00	0.13	4.67	0.00	0.08	0.00	0.00	4.88
	2018				0.13	4.40	0.01	0.15			4.68
	2023		0.00	0.00	0.17	5.57	0.01	0.20	0.00	0.00	5.94
	2030		0.00	0.00	0.19	6.12	0.01	0.22	0.00	0.00	6.53
	2036		0.00	0.00	0.19	6.22	0.01	0.21	0.00	0.00	6.63
	2045		0.00	0.00	0.19	6.24	0.01	0.22	0.00	0.00	6.66
Sum of PM10BW	2008				0.08	2.74	0.01	0.47			3.30
	2012				0.10	3.53	0.01	0.37			4.01
	2014	0.00	0.00	0.00	0.23	8.00	0.01	0.37	0.00	0.00	8.62
	2018				0.22	7.54	0.02	0.69			8.47
	2023		0.00	0.00	0.29	9.55	0.03	0.91	0.00	0.00	10.78
	2030		0.00	0.00	0.32	10.49	0.03	0.99	0.00	0.00	11.84
	2036		0.00	0.00	0.32	10.66	0.03	0.98	0.00	0.00	12.00
	2045		0.00	0.00	0.32	10.71	0.03	1.00	0.00	0.00	12.06
Sum of SOx	2008	0.17	444.49	0.02	0.05	0.79	0.00	0.04	0.39	0.03	445.98
	2012	0.31	60.93	0.02	0.07	0.99	0.00	0.03	0.39	0.03	62.78
	2014	0.59	105.53	0.01	0.18	2.19	0.00	0.03	0.42	0.03	108.97
	2018	0.48	53.73	0.03	0.17	2.05	0.00	0.05	0.50	0.03	57.05
	2023	0.69	56.67	0.02	0.20	2.47	0.00	0.06	0.71	0.04	60.88
	2030	0.76	68.83	0.02	0.20	2.28	0.00	0.06	0.75	0.04	72.93
	2036	0.76	68.83	0.02	0.18	1.98	0.00	0.05	0.71	0.04	72.57
	2045	0.76	68.83	0.02	0.15	1.71	0.00	0.05	0.65	0.04	72.21
Sum of CO2	2008	38439.76	28299.68	1727.46	6846.07	79213.36	258.63	4327.48	38706.55	2594.97	200413.96
	2012	62820.16	27826.12	2057.40	8812.33	98423.47	196.08	3262.51	38635.23	2790.20	244823.51
	2014	114481.23	184121.12	626.34	22561.58	217818.32	186.09	3152.15	41294.05	3219.16	587460.03
	2018	94969.39	80795.85	3252.70	21726.33	203025.92	353.21	5376.92	49054.16	3045.88	461600.36
	2023	140902.84	85196.35	2160.02	27358.93	235589.87	403.49	6254.62	70781.72	3572.15	572220.00
	2030	143300.31	103487.14	1729.30	26057.29	222322.59	373.46	5743.72	74125.82	3549.01	580688.63
	2036	143422.76	103487.14	1729.30	22767.50	194696.53	342.96	5251.53	70071.64	3513.29	545282.64
	2045	143524.01	103487.14	1729.30	19708.46	171959.24	335.90	5231.81	64493.15	3512.84	513981.85
Sum of CH4	2008	2.80	0.26	0.04	0.86	3.88	0.12	0.24	3.13	0.21	11.54
	2012	5.69	0.27	0.04	0.22	0.88	0.07	0.12	3.13	0.22	10.64
	2014	12.12	3.44	0.01	0.42	1.48	0.06	0.09	3.34	0.26	21.23
	2018	11.84	1.07	0.07	0.45	1.73	0.08	0.08	3.97	0.24	19.53
	2023	52.57	1.02	0.04	0.28	0.42	0.07	0.05	5.73	0.29	60.46
	2030	85.12	1.31	0.04	0.29	0.30	0.05	0.03	6.00	0.29	93.41
	2036	85.06	1.31	0.04	0.28	0.23	0.03	0.02	5.67	0.28	92.93
	2045	83.94	1.31	0.04	0.28	0.21	0.03	0.02	5.22	0.28	91.32
Sum of N2O	2008	0.00	1.73	0.08	0.42	13.46	0.04	0.26	1.02	0.07	17.07
	2012	0.00	1.55	0.09	0.48	17.23	0.02	0.14	1.02	0.07	20.61
	2014	0.00	11.24	0.03	1.10	38.36	0.02	0.11	1.09	0.08	52.03
	2018	0.00	5.57	0.15	1.06	36.14	0.04	0.12	1.29	0.08	44.45
	2023	0.00	5.60	0.10	1.35	44.12	0.04	0.10	1.86	0.09	53.27
	2030	0.00	5.68	0.08	1.26	40.52	0.03	0.08	1.95	0.09	49.70
	2036	0.00	5.68	0.08	1.08	35.16	0.03	0.08	1.84	0.09	44.04
	2045	0.00	5.68	0.08	0.92	30.26	0.03	0.08	1.70	0.09	38.84
Sum of DPM	2008	3.39	37.49	1.74	3.24	27.66	0.00	0.00	20.03	1.29	94.85
	2012	5.30	15.21	0.98	0.28	6.48	0.00	0.00	15.72	1.02	44.98
	2014	3.77	51.34	0.27	0.24	5.32	0.00	0.00	14.04	0.97	75.95
	2018	2.96	22.43	0.27	0.33	9.44	0.00	0.00	14.19	0.76	50.37
	2023	2.49	19.62	0.16	0.07	3.77	0.00	0.00	14.95	0.70	41.76
	2030	1.28	43.83	0.15	0.07	3.80	0.00	0.00	9.74	0.44	59.32
	2036	1.53	43.83	0.17	0.07	3.44	0.00	0.00	5.54	0.27	54.85
	2045	1.34	43.83	0.13	0.07	2.81	0.00	0.00	2.55	0.14	50.87

Table B1-674. Peak 8hr Proposed Mitigated Scenario different type of PM10 emissions by Fuel Type and Source Category in lbs/8-hr

Source category	Fuel	Year	PM10exh,tire,brk	PM10fugdust	DPM
CHE	Diesel	2008	3.4		3.4
		2012	5.3		5.3
		2014	3.8	0.0	3.8
		2018	3.0		3.0
		2023	2.5		2.5
		2030	1.3		1.3
		2036	1.5		1.5
		2045	1.3		1.3
	LPG	2008	1.9		0.0
		2012	2.8		0.0
		2014	4.9	0.0	0.0
		2018	4.2		0.0
		2023	3.2		0.0
OGV	MDO/MGO	2008	45.8		37.5
		2012	15.8		15.2
		2014	57.3	0.0	51.3
		2018	26.1		22.4
		2023	23.8	0.0	19.6
		2030	47.8	0.0	43.8
		2036	47.8	0.0	43.8
		2045	47.8	0.0	43.8
Harbor Craft	MDO/MGO	2008	1.7		1.7
		2012	1.0		1.0
		2014	0.3	0.0	0.3
		2018	0.3		0.3
		2023	0.2	0.0	0.2
		2030	0.1	0.0	0.1
		2036	0.2	0.0	0.2
		2045	0.1	0.0	0.1
Onsite Trucks	Diesel	2008	3.4	4.5	3.2
		2012	0.4	4.7	0.3
		2014	0.6	11.1	0.2
		2018	0.6	0.0	0.3
		2023	0.5	14.2	0.1
		2030	0.5	15.8	0.1
		2036	0.5	16.0	0.1
		2045	0.5	16.0	0.1
	95% LNG+5% Diesel	2008	0.0	0.0	0.0
		2012	0.0	0.5	0.0
		2014	0.1	1.0	0.0
		2018	0.1	11.7	0.0
		2023	0.0	1.3	0.0
		2030	0.0	1.4	0.0
		2036	0.0	1.4	0.0
		2045	0.0	1.4	0.0
Offsite Trucks	LNG+Diesel	2008	32.0	3.3	27.7
		2012	12.8	4.2	6.5
		2014	18.4	9.8	5.3
		2018	22.2	9.1	9.4
		2023	19.2	11.1	3.8
		2030	20.7	12.3	3.8
		2036	20.6	12.6	3.4
		2045	20.0	12.5	2.8
Onsite PC	Diesel/Gas/Elec	2008	0.0	0.2	0.0
		2012	0.0	0.1	0.0
		2014	0.0	0.1	0.0
		2018	0.0	0.2	0.0
		2023	0.0	0.3	0.0
		2030	0.0	0.4	0.0
		2036	0.0	0.4	0.0
		2045	0.0	0.4	0.0
Offsite PC	Diesel/Gas/Elec	2008	0.6	1.0	0.0
		2012	0.5	0.8	0.0
		2014	0.5	0.8	0.0
		2018	0.9	1.5	0.0
		2023	1.1	1.8	0.0
		2030	1.2	2.0	0.0
		2036	1.2	2.0	0.0
		2045	1.2	2.0	0.0
Rail Offsite	Diesel	2008	20.0		20.0
		2012	15.7		15.7
		2014	14.0	0.0	14.0
		2018	14.2		14.2
		2023	14.9	0.0	14.9
		2030	9.7	0.0	9.7
		2036	5.5	0.0	5.5
		2045	2.5	0.0	2.5
Rail Onsite	Diesel	2008	1.3		1.3
		2012	1.0		1.0
		2014	1.0	0.0	1.0
		2018	0.8		0.8
		2023	0.7	0.0	0.7
		2030	0.4	0.0	0.4
		2036	0.3	0.0	0.3
		2045	0.1	0.0	0.1
Grand Total			**638.4**	**189.7**	**472.9**

Table B1-675. Proposed Mitigated Scenario Peak hour Emissions by Source Category and Analysis Year in lbs/hr

		Source category									
Values	**Year**	**CHE**	**OGV**	**Harbor Craft**	**Onsite Trucks**	**Offsite Trucks**	**Onsite PC**	**Offsite PC**	**Rail Offsite**	**Rail Onsite**	**Grand Total**
Sum of NOx	2008	30.98	30.82	40.27	11.85	129.93	0.07	0.55	70.99	4.66	320.11
	2012	45.06	30.38	27.26	8.76	60.62	0.04	0.28	58.73	4.01	235.14
	2014	98.43	566.40	7.71	19.49	125.22	0.03	0.20	59.40	4.36	881.24
	2018	79.85	414.20	0.00	19.46	123.66	0.05	0.18	71.38	4.10	712.87
	2023	35.25	93.87	0.00	13.48	65.74	0.04	0.11	82.32	4.04	294.84
	2030	4.12	151.51	2.36	15.29	57.47	0.03	0.08	59.81	2.87	293.54
	2036	4.49	86.39	2.47	15.42	53.02	0.03	0.06	38.67	2.02	202.56
	2045	4.19	50.60	2.24	15.42	58.23	0.03	0.06	20.95	1.29	153.00
Sum of VOC	2008	3.06	1.06	2.89	2.03	8.26	0.09	0.18	3.71	0.25	21.54
	2012	7.97	1.46	2.55	0.54	1.87	0.05	0.09	2.90	0.20	17.63
	2014	17.60	29.28	0.84	1.08	3.17	0.04	0.06	2.61	0.20	54.88
	2018	20.32	27.08	0.00	1.13	3.69	0.06	0.05	2.71	0.16	55.20
	2023	22.56	3.50	0.00	0.79	0.88	0.04	0.03	2.95	0.15	30.89
	2030	3.73	20.10	0.31	0.84	0.61	0.03	0.01	2.06	0.10	27.79
	2036	5.10	20.10	0.33	0.83	0.48	0.02	0.01	1.31	0.07	28.25
	2045	4.03	20.10	0.28	0.82	0.44	0.01	0.01	0.77	0.05	26.50
Sum of CO	2008	73.49	2.58	11.47	5.57	32.33	0.64	5.86	12.54	0.84	145.32
	2012	125.15	3.33	15.68	2.03	6.35	0.38	3.11	12.51	0.91	169.45
	2014	281.09	30.18	4.94	4.92	9.00	0.32	2.44	13.38	1.05	347.31
	2018	268.77	11.00	0.00	5.36	11.45	0.50	2.62	15.89	0.99	316.58
	2023	177.54	8.87	0.00	10.92	4.07	0.50	2.06	22.93	1.16	228.05
	2030	48.18	29.19	5.94	12.13	4.36	0.43	1.70	24.01	1.15	127.11
	2036	50.62	29.19	6.29	12.19	4.39	0.38	1.54	22.70	1.14	128.45
	2045	48.76	29.19	5.58	12.19	5.00	0.36	1.53	20.89	1.14	124.65
Sum of PM25	2008	0.72	3.12	1.60	0.45	4.01	0.00	0.04	2.30	0.15	12.39
	2012	1.10	0.89	0.90	0.05	1.27	0.00	0.03	1.82	0.12	6.19
	2014	1.21	7.27	0.25	0.05	1.45	0.00	0.03	1.64	0.11	12.02
	2018	0.99	3.37	0.00	0.07	2.03	0.00	0.05	1.64	0.09	8.23
	2023	0.79	2.25	0.00	0.03	1.31	0.00	0.07	1.74	0.08	6.27
	2030	0.21	4.78	0.05	0.04	1.39	0.00	0.07	1.16	0.05	7.74
	2036	0.24	4.78	0.06	0.04	1.35	0.00	0.07	0.67	0.03	7.24
	2045	0.21	4.78	0.05	0.04	1.26	0.00	0.07	0.32	0.02	6.74
Sum of PM10	2008	0.76	3.87	1.74	0.48	4.58	0.00	0.09	2.50	0.16	14.19
	2012	1.16	0.96	0.98	0.07	1.83	0.00	0.07	1.96	0.13	7.16
	2014	1.25	7.92	0.27	0.09	2.65	0.00	0.07	1.76	0.12	14.13
	2018	1.02	3.65	0.00	0.10	3.19	0.00	0.12	1.77	0.09	9.96
	2023	0.81	2.44	0.00	0.08	2.67	0.01	0.16	1.87	0.09	8.12
	2030	0.22	5.18	0.06	0.08	2.88	0.01	0.17	1.22	0.06	9.87
	2036	0.25	5.18	0.07	0.08	2.87	0.01	0.17	0.69	0.03	9.35
	2045	0.23	5.18	0.05	0.08	2.78	0.01	0.17	0.32	0.02	8.83
Sum of PM10TW	2008				0.01	0.23	0.00	0.01			0.25
	2012				0.01	0.29	0.00	0.01			0.31
	2014	0.00	0.00	0.00	0.02	0.67	0.00	0.01	0.00	0.00	0.70
	2018				0.02	0.63	0.00	0.02			0.67
	2023		0.00	0.00	0.02	0.77	0.00	0.03	0.00	0.00	0.83
	2030		0.00	0.00	0.03	0.85	0.00	0.03	0.00	0.00	0.91
	2036		0.00	0.00	0.03	0.86	0.00	0.03	0.00	0.00	0.92
	2045		0.00	0.00	0.03	0.87	0.00	0.03	0.00	0.00	0.93
Sum of PM10BW	2008				0.01	0.39	0.00	0.07			0.47
	2012				0.01	0.51	0.00	0.05			0.57
	2014	0.00	0.00	0.00	0.03	1.15	0.00	0.05	0.00	0.00	1.24
	2018				0.03	1.08	0.00	0.10			1.22
	2023		0.00	0.00	0.04	1.33	0.00	0.13	0.00	0.00	1.50
	2030		0.00	0.00	0.04	1.46	0.00	0.14	0.00	0.00	1.65
	2036		0.00	0.00	0.05	1.48	0.00	0.14	0.00	0.00	1.67
	2045		0.00	0.00	0.05	1.49	0.00	0.14	0.00	0.00	1.68
Sum of SOx	2008	0.03	44.35	0.02	0.01	0.11	0.00	0.01	0.05	0.00	44.58
	2012	0.04	5.88	0.02	0.01	0.14	0.00	0.00	0.05	0.00	6.16
	2014	0.08	14.35	0.01	0.03	0.31	0.00	0.00	0.05	0.00	14.84
	2018	0.07	8.11	0.00	0.02	0.30	0.00	0.01	0.06	0.00	8.57
	2023	0.10	5.65	0.00	0.03	0.34	0.00	0.01	0.09	0.00	6.23
	2030	0.11	6.87	0.01	0.03	0.32	0.00	0.01	0.09	0.00	7.43
	2036	0.11	6.87	0.01	0.02	0.28	0.00	0.01	0.09	0.00	7.38
	2045	0.11	6.87	0.01	0.02	0.24	0.00	0.01	0.08	0.00	7.34
Sum of CO2	2008	5498.58	2824.82	1727.46	979.29	11330.99	36.99	619.02	4838.32	324.37	28179.83
	2012	8977.49	2684.38	2057.40	1259.35	14065.47	28.02	466.24	4829.40	348.78	34716.53
	2014	16462.98	24752.21	626.34	3244.47	31323.38	26.76	453.29	5161.76	402.39	82453.58
	2018	13649.49	12200.62	0.00	3122.62	29179.93	50.77	772.80	6131.77	380.73	65488.74
	2023	19600.00	8475.65	0.00	3805.71	32771.25	56.13	870.04	8847.72	446.52	74873.02
	2030	19933.50	10303.92	670.02	3624.65	30925.73	51.95	798.97	9265.73	443.63	76018.09
	2036	19950.53	10303.92	670.02	3167.03	27082.87	47.71	730.50	8758.95	439.16	71150.69
	2045	19964.62	10303.92	670.02	2741.51	23920.04	46.73	727.76	8061.64	439.10	66875.34
Sum of CH4	2008	0.40	0.02	0.04	0.12	0.55	0.02	0.03	0.39	0.03	1.61
	2012	0.81	0.02	0.04	0.03	0.13	0.01	0.02	0.39	0.03	1.48
	2014	1.74	0.56	0.01	0.06	0.21	0.01	0.01	0.42	0.03	3.06
	2018	1.70	0.17	0.00	0.06	0.25	0.01	0.01	0.50	0.03	2.74
	2023	7.31	0.07	0.00	0.04	0.06	0.01	0.01	0.72	0.04	8.24
	2030	11.84	0.10	0.01	0.04	0.04	0.01	0.00	0.75	0.04	12.83
	2036	11.83	0.10	0.01	0.04	0.03	0.00	0.00	0.71	0.04	12.77
	2045	11.68	0.10	0.01	0.04	0.03	0.00	0.00	0.65	0.04	12.55
Sum of N2O	2008	0.00	0.17	0.08	0.06	1.92	0.01	0.04	0.13	0.01	2.41
	2012	0.00	0.16	0.09	0.07	2.46	0.00	0.02	0.13	0.01	2.94
	2014	0.00	1.62	0.03	0.16	5.52	0.00	0.02	0.14	0.01	7.49
	2018	0.00	0.85	0.00	0.15	5.19	0.01	0.02	0.16	0.01	6.40
	2023	0.00	0.49	0.00	0.19	6.14	0.01	0.01	0.23	0.01	7.08
	2030	0.00	0.57	0.03	0.17	5.64	0.00	0.01	0.24	0.01	6.69
	2036	0.00	0.57	0.03	0.15	4.89	0.00	0.01	0.23	0.01	5.90
	2045	0.00	0.57	0.03	0.13	4.21	0.00	0.01	0.21	0.01	5.18
Sum of DPM	2008	0.48	2.83	1.74	0.46	3.96	0.00	0.00	2.50	0.16	12.15
	2012	0.76	0.89	0.98	0.04	0.93	0.00	0.00	1.96	0.13	5.69
	2014	0.54	7.21	0.27	0.03	0.77	0.00	0.00	1.76	0.12	10.70
	2018	0.43	3.15	0.00	0.05	1.36	0.00	0.00	1.77	0.09	6.85
	2023	0.35	1.92	0.00	0.01	0.52	0.00	0.00	1.87	0.09	4.76
	2030	0.18	4.68	0.06	0.01	0.53	0.00	0.00	1.22	0.06	6.72
	2036	0.21	4.68	0.07	0.01	0.48	0.00	0.00	0.69	0.03	6.17
	2045	0.19	4.68	0.05	0.01	0.39	0.00	0.00	0.32	0.02	5.65

Table B1-676. Peak hour Proposed Mitigated Scenario different type of PM10 emissions by Fuel Type and Source Category in lbs/hr

Source category	Fuel	Year	PM10exh,tire,brk	PM10fugdust	DPM
CHE	Diesel	2008	0.5		0.5
		2012	0.8		0.8
		2014	0.5	0.0	0.5
		2018	0.4		0.4
		2023	0.3		0.3
		2030	0.2		0.2
		2036	0.2		0.2
		2045	0.2		0.2
	LPG	2008	0.3		0.0
		2012	0.4		0.0
		2014	0.7	0.0	0.0
		2018	0.6		0.0
		2023	0.4		0.0
OGV	MDO/MGO	2008	3.9		2.8
		2012	1.0		0.9
		2014	7.9	0.0	7.2
		2018	3.6		3.1
		2023	2.4	0.0	1.9
		2030	5.2	0.0	4.7
		2036	5.2	0.0	4.7
		2045	5.2	0.0	4.7
Harbor Craft	MDO/MGO	2008	1.7		1.7
		2012	1.0		1.0
		2014	0.3	0.0	0.3
		2018	0.0		0.0
		2023	0.0	0.0	0.0
		2030	0.1	0.0	0.1
		2036	0.1	0.0	0.1
		2045	0.1	0.0	0.1
Onsite Trucks	Diesel	2008	0.5	0.6	0.5
		2012	0.1	0.7	0.0
		2014	0.1	1.6	0.0
		2018	0.1	0.0	0.0
		2023	0.1	2.0	0.0
		2030	0.1	2.2	0.0
		2036	0.1	2.2	0.0
		2045	0.1	2.2	0.0
	95% LNG+5% Diesel	2008	0.0	0.0	0.0
		2012	0.0	0.1	0.0
		2014	0.0	0.1	0.0
		2018	0.0	1.7	0.0
		2023	0.0	0.2	0.0
		2030	0.0	0.2	0.0
		2036	0.0	0.2	0.0
		2045	0.0	0.2	0.0
Offsite Trucks	LNG+Diesel	2008	4.6	0.5	4.0
		2012	1.8	0.6	0.9
		2014	2.7	1.4	0.8
		2018	3.2	1.3	1.4
		2023	2.7	1.5	0.5
		2030	2.9	1.7	0.5
		2036	2.9	1.7	0.5
		2045	2.8	1.7	0.4
Onsite PC	Diesel/Gas/Elec	2008	0.0	0.0	0.0
		2012	0.0	0.0	0.0
		2014	0.0	0.0	0.0
		2018	0.0	0.0	0.0
		2023	0.0	0.0	0.0
		2030	0.0	0.0	0.0
		2036	0.0	0.0	0.0
		2045	0.0	0.0	0.0
Offsite PC	Diesel/Gas/Elec	2008	0.1	0.1	0.0
		2012	0.1	0.1	0.0
		2014	0.1	0.1	0.0
		2018	0.1	0.2	0.0
		2023	0.2	0.2	0.0
		2030	0.2	0.3	0.0
		2036	0.2	0.3	0.0
		2045	0.2	0.3	0.0
Rail Offsite	Diesel	2008	2.5		2.5
		2012	2.0		2.0
		2014	1.8	0.0	1.8
		2018	1.8		1.8
		2023	1.9	0.0	1.9
		2030	1.2	0.0	1.2
		2036	0.7	0.0	0.7
		2045	0.3	0.0	0.3
Rail Onsite	Diesel	2008	0.2		0.2
		2012	0.1		0.1
		2014	0.1	0.0	0.1
		2018	0.1		0.1
		2023	0.1	0.0	0.1
		2030	0.1	0.0	0.1
		2036	0.0	0.0	0.0
		2045	0.0	0.0	0.0
Grand Total			**81.5**	**26.7**	**58.7**